



Designation: D3423/D3423M – 15

## Standard Practice for Application of Emulsified Coal-Tar Pitch (Mineral Colloid Type)<sup>1</sup>

This standard is issued under the fixed designation D3423/D3423M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice covers the application of mineral-colloid-stabilized, emulsified coal-tar pitch meeting the requirements of Specification **D5727/D5727M**, as a weather protection and aliphatic-solvent-resistant sealer for use on bituminous pavements of airports, parking lots, and driveways.

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. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D5727/D5727M** Specification for Emulsified Refined Coal Tar (Mineral Colloid Type)

### 3. Preparation of Surface

3.1 *Old Asphalt Surfaces* (those which have weathered over a change of seasons):

3.1.1 Repair and patch all pavement defects. If a solvent containing cold-applied material is used, this should be done a minimum of 90 days prior to the planned application of the sealer to permit solvent escape before sealing.

3.1.2 Thoroughly inspect the pavement surface for minor cracks or other imperfections. Ignore hairline cracks. Open

minor cracks (less than 12.7 mm [ $\frac{1}{2}$  in.]) to a minimum depth and width of 12.7 mm and fill with a crack filler approved by the manufacturer of the sealer. Wider cracks, along with soft or sunken spots, indicate that the pavement or the pavement base should be repaired or replaced.

3.1.3 Treat old, badly oxidized asphalt pavement or asphalt pavement that has lost binder by erosion leaving exposed aggregate with a prime coat recommended by the sealer manufacturer after all loose aggregate is removed. This prime coat is to dry thoroughly before proceeding.

3.1.4 Immediately prior to application of the sealer, clean the surface of all loose dust, dirt, leaves, and other foreign materials by sweeping, by flushing well with water, or a combination of both.

3.1.5 Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent until a water-break-free surface is obtained after thorough flushing with clear water. If cleaning is unable to produce a true “water-break-free” surface, and the size of the unsatisfactory area is too small to warrant replacement as described in **3.1.1**, the questionable area should be treated with a spot sealer as per the pavement sealer manufacturer’s recommendation. Do not use only solvents to remove oil or grease as the solvents may affect adhesion of the sealer.

3.1.6 Remove and patch pavement that has been penetrated by oil and grease in accordance with the precautions described in **3.1.1** if a cold patch is required.

3.1.7 Treat old parking and traffic control lines with a prime coat. If control lines are excessively built-up from multiple applications, abrade to the pavement surface before application of the prime coat.

#### 3.2 *New Asphalt Surfaces:*

3.2.1 Allow conventional hot-mix asphalt surfaces to age a minimum of 30 days prior to the application of the sealer.

3.2.2 Before application of sealer over a pavement constructed by the use of solvent-containing cold-mix asphalt, age the pavement a minimum of 90 days. A careful review and inspection of the pavement should be made by the supplier to ensure that all solvents have escaped prior to application of the sealer.

3.2.3 Extend the curing period for new asphalt surfaces during cool or cold weather.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee **D08** on Roofing and Waterproofing and is the direct responsibility of Subcommittee **D08.09** on Bituminous Emulsions.

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<sup>2</sup> 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.

3.2.4 The surface should be clean and free from oil and grease (see 3.1.4, 3.1.5, and 3.1.6).

#### 4. Preparation of Emulsion

4.1 Stir the emulsion to a uniform consistency prior to use. Mechanical mixing is preferred as it will lessen the stirring time and usually result in a more uniform mix.

4.2 Coal-tar pitch emulsion sealers normally require no dilution and should be applied directly as they come from the containers unless otherwise specifically recommended by the manufacturer.

4.3 It may be necessary to add sand to the top coat of the emulsion prior to application in order to provide added traction. This sand (No. 2 blast sand unless otherwise designated by the emulsion manufacturer) should meet the following requirements:

Sieve Size	% Passing
1.18-mm [No. 16]	100
850-µm [No. 20]	85 to 100
425-µm [No. 40]	0 to 15
150-µm [No. 100]	0 to 5

4.3.1 Clean sand should be uniformly blended with the sealer using 240 to 720 g/L [2 to 6 lb/gal]. Stirring throughout the application period is necessary to ensure proper dispersion. Small additional increments of water may be needed to provide a workable consistency.

#### 5. Application of Emulsion

##### 5.1 First Coat:

5.1.1 Unless previously primed as specified by the sealer manufacturer, uniformly dampen the clean bituminous surface with clean water to provide maximum adhesion. The surface is properly dampened when no free water appears on the palm of the hand after firmly pressing against the pavement, yet it has a wet appearance.

5.1.2 On unprimed surfaces, thin the first coat of sealer no more than 15 % with clean water prior to application by brush, squeegee, or spray at the rate of 3.1 m<sup>2</sup>/L [125 ft<sup>2</sup>/gal], or as specified by the manufacturer. Actual coverage obtained will depend on the texture and porosity of the pavement being sealed.

5.1.3 On primed surfaces, apply the sealer as it comes from the container unless otherwise specifically recommended by the manufacturer.

5.1.4 Allow sealer to dry and cure sufficiently to allow foot traffic on sealed pavement before applying second coat. The time required could be as short as three hours under the most ideal conditions and as long as 36 h or more when conditions are unfavorable. Sheltered or shady areas will normally require a longer drying period.

##### 5.2 Second Coat:

5.2.1 Normally the surface need not be dampened (see 6.3) prior to application of the second coat.

5.2.2 Apply the second coat at right angles to the first coat at the rate of 2.5 m<sup>2</sup>/L [100 ft<sup>2</sup>/gal] or as specified by the manufacturer, using brush, squeegee, sealing machine, or distributor.

5.2.3 When the second coat has thoroughly dried and cured (24 to 48 h under favorable conditions), the sealed surface may be opened to traffic.

#### 6. Application Precautions

6.1 Pavement sealer should not be applied during rainy or wet weather, or when rain is anticipated within 8 h after application is completed.

6.2 Sealer should not be applied unless pavement temperature is at least 7°C [45°F] and the air temperature is 7°C and rising. It is best applied when the air and pavement surface are between 10 and 27°C [50 and 80°F] and at least 3 h of sunlight will remain upon completion of the application.

6.3 Sealer should never be applied to hot, dry surfaces under the summer sun. Hot surfaces should first be cooled with clean water (see 5.1.1).

6.4 Adequate drying time must be allowed between coats and before use (see 5.1.4 and 5.2.3), otherwise pickup or tracking may result.

6.5 Since an emulsion may be damaged by freezing, it should be protected at all times when the temperature drops below 4°C [40°F].

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