Designation: D7000 – 19a (Reapproved 2025)

Standard Test Method for Sweep Test of Emulsified Asphalt Surface Treatment Samples[1]

This standard is issued under the fixed designation D7000; 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 test method measures the curing performance characteristics of emulsified asphalt and aggregates by simulating the brooming of a surface treatment in the laboratory.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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]

D75/D75M Practice for Sampling Aggregates

D226/D226M Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

D3666 Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 *ISSA Document:*[3]

ISSA Technical Bulletin No. 100 Test Method for Wet Track Abrasion of Slurry Surfaces

3. Summary of Test Method

3.1 The sweep test is effective for defining the film formation stage of emulsified asphalt. A brush (designed to closely replicate the sweeping action of a broom) exerts a force on the aggregate used on surface treatments. Emulsified asphalt is applied to an asphalt felt disk. Aggregate is applied and embedded into the emulsified asphalt. The sample is then conditioned at a prescribed temperature and time period before testing. A mixer abrades the surface of the sample using a nylon brush. After 1 min of abrasion, the test is stopped, any loose aggregate is removed, and the percent mass loss is calculated.

4. Significance and Use

4.1 This test method is useful for classifying rapid-setting emulsified asphalt and is applicable to surface treatments that require a quick return to traffic. It has the capability to predict surface treatment performance in the formative stage using construction components. This performance test is intended to evaluate the potential curing characteristics of a binder-aggregate combination to ensure that the surface treatment is sufficiently cured before allowing traffic onto the seal.

NOTE 1—The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of Specification D3666 are generally capable of competent and objective testing, sampling, inspection, etc. Users of this standard are cautioned that compliance with Specification D3666 alone does not completely ensure reliable results. Reliable results depend on many factors; following the suggestions of Specification D3666 or some similar acceptable guideline provides a means of evaluating and

[1] This test method is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.24 on Asphalt Surface Treatments.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from International Slurry Surfacing Association (ISSA), 3 Church Circle, PMB 250, Annapolis, MD 21401, http://www.slurry.org.

controlling some of those factors.

5. Apparatus

5.1 *Mixer*[4]—Use to abrade the sample.

5.2 *Quick-Clamp Mounting Base*[5]—This base must be an adequate and level support for clamping the sample in place. The test sample should not move during abrasion.

5.3 *Pan*—An appropriate pan will contain the test sample on the mixer and hold dislodged aggregate.

5.4 *Oven*—The conditioning oven shall be a constant temperature forced-draft oven meeting the following requirements, containing shelves with at least 65 % voids. The shelves shall be placed at least 120 mm apart and 100 mm away from the top and floor.

Oven Type	Forced-draft oven
Min Inside D × W × H	460 × 460 × 460 mm
Accuracy	±1.0 °C

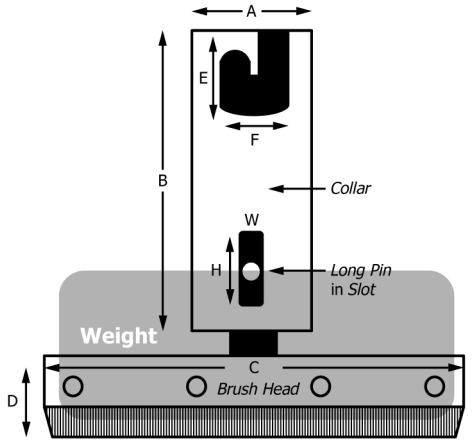
5.5 *Balance*—A balance capable of weighing 800 g or more to within ±0.1 g. A minimum platform length and width of 240 mm is required.

5.6 *Removable Brush Holder*—The brush holder shall be attachable to the mixer and capable of a free-floating vertical movement of 19 ± 1 mm having the dimensions listed in Fig. 1. A drawing of this apparatus can be seen in Fig. 1. The total weight of the brush head and the attached weight shall weigh 1500 ± 15 g. The collar and nylon strip brush are not included in this weight. The brush clamping system shall hold the nylon strip brush in place so that it will not move or dislodge during testing.

5.7 *Nylon Strip Brush*[6]—The brush shall conform to the following specifications.

Overall Trim	25.4 mm
Overall Length	127 ± 1 mm
Backing Size	#7
Fill Material	Crimped black nylon
Nylon Type	6.0
Fill Diameter	0.254 mm
Weight	35 ± 2 g

5.8 *Strike-Off Template*—The template should consist of a flat, stainless steel metal plate. It shall include a 280 ± 3 mm diameter cut-out with a flush edge. A 16 gage U.S. Standard (plate and sheet metal) will suffice in most cases.



Dimensions		
ID	Name	mm
A	Collar diameter	36
B	Collar height	76
C	Brush head length	128
D	Overall brush head height	19
E	Groove height	17
F	Groove width	18
H	Slot height	19
W	Slot width	7

FIG. 1 Brush Holder

NOTE 2—Emulsion mass may vary according to emulsion viscosity and applied strike-off pressure. Alternative gages may be necessary for emulsion mass correction for varying aggregate sizes and shapes.

5.9 *Strike-Off Rod*—The 750 ± 100 mm rod shall be made of 17 to 20 mm electrical conduit for striking off emulsion from the template surface.

5.10 *Sweep Test Compactor*—A suitable compaction device with a minimum curved surface radius of 550 ± 30 mm and shall weigh 7500 ± 500 g. A picture of this apparatus can be seen in Fig. 2.

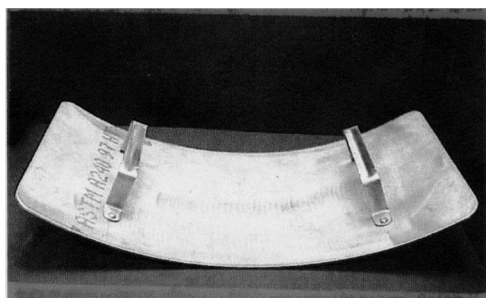


FIG. 2 Sweep Test Compactor

6. Materials

6.1 *Emulsified Asphalt*—The emulsified asphalt should meet all applicable specifications for the surface treatment application. The emulsified asphalt shall be equilibrated to a temperature of 60 °C for sample production.

6.2 *Aggregates*—The job aggregates should be sampled and split according to Practice D75/D75M. They shall be placed in an oven and dried to a constant weight. The aggregates shall be

[4] The sole source of supply of the Hobart Mixer ⅓ H.P. Fixed Speed Motor, model A 120, apparatus known to the committee at this time is Hobart Corporation, 701 S. Ridge Ave., Troy, OH 45374, http://www.hobartcorp.com. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.

[5] The sole source of supply of the Wet Track Abrasion Tester (ISSA TB100) apparatus known to the committee at this time is Mastrad Limited, Finch House, 25 Finch Road, Douglas, United Kingdom IM1 2PS, http://www.mastrad.com. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.

[6] The sole source of supply of the Nylon Strip Brush Part #MB7006 apparatus known to the committee at this time is Tanis Incorporated, 3660 Kettle Court E., Delafield, WI 53018, http://www.tanisinc.com. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,[1] which you may attend.