Designation: D 2995 – 99 (Reapproved 2004)

Standard Practice for Estimating Application Rate of Bituminous Distributors[1]

This standard is issued under the fixed designation D 2995; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice covers the determination of transverse and longitudinal application rate of asphalt distributors in gallons per square yard (or litres per square metre).

1.2 *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.*

1.3 The values given in inch-pound units are to be regarded as the standard. The SI values given in parentheses are for information purposes only.

2. Summary of Practice

2.1 *Test Method A*:

2.1.1 Pre-weighed calibration pads are placed on the surface of the roadway in front of the distributor to be calibrated. The asphalt distributor to be calibrated is driven over the calibration pads while spraying asphalt. The calibration pads are removed from the roadway and reweighed. The weight of asphalt applied to the pads is determined by subtraction and the rate of application is calculated.

2.2 *Test Method B*:

2.2.1 Containers are placed under each nozzle of a bituminous distributor and bituminous material is sprayed into the containers for a known period of time. The volume of bituminous material sprayed after this period is calculated. The transverse uniformity of bituminous material sprayed on the pavement is obtained from this calculation and the distribution of bituminous material applied longitudinally on the pavement is calculated as a function of the distributor velocity.

3. Significance and Use

3.1 The amount of bituminous material applied to a pavement surface using a bituminous distributor can be estimated using the described procedure.

FIG. 1 Weighing Box and Balance

4. Apparatus

4.1 *Test Methods A and B*:

4.1.1 *Balance*, sensitive to 0.1 g.

4.1.2 *Weighing Box or Balance Shield*, to protect balance from wind when the balance is in use at the project site (see Fig. 1).

4.1.3 *Balance Table and Work Table*, for weighing.

4.2 *Test Method B*:

4.2.1 *Elliptical Containers*, measuring approximately 3.5 in. (88.9 mm) along the short axis and 9 in. (228.6 mm) along the long axis of the ellipse and 8 in. (203.2 mm) in height, capable of an internal volume of approximately 1 gal.

4.2.2 *Rubber Bands*, capable of a snug fit when stretched around the elliptical containers.

4.2.3 *Stopwatch*, capable of recording to the nearest 0.1 s.

5. Materials

5.1 *Test Method A*:

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

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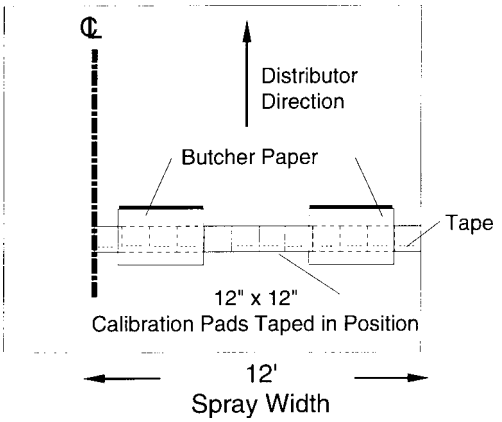

FIG. 2 Position of Calibration Pad Assemblies for Transverse Rate Determination

5.1.1 *Geotextile Pads*, [2] weighing a minimum of 8 oz/yd^2 and measuring 12 in. (304.8 mm) by 12 in. (304.8 mm).

5.1.2 *Aluminized Duct Tape*, measuring 2 in. (50.8 mm) wide and 6 in. (152.4 mm) long.

5.1.3 *Butcher Paper #50*, [3] measuring 30 in. (762 mm) by 950 ft, for temporary protection of geotextile pads during calibration.

5.2 *Test Method B*:

5.2.1 *Plastic Bags*, capable of fitting inside the elliptical cans but of sufficiently larger dimension to allow folding over the edge of the elliptical containers once placed inside.

6. Procedure (Transverse Application Rate)

6.1 *Test Method A*:

6.1.1 Select enough of the geotextile fabric pads so that when placed end-to-end on the roadway a continuous strip is created across the width of the roadway to be sprayed with asphalt.

6.1.2 Create a loop with the duct tape with the adhesive side facing out. Place two loops of duct tape on one edge of each of the geotextile fabric pads.

6.1.3 Obtain the weight of the pad and tape assembly to the nearest 0.1 g.

6.1.4 Place the pad assembly with the tape facing down on the roadway so the taped edge is facing the distributor. Apply pressure to the taped pad to secure it to the roadway. Continue this operation for the remaining pads for the entire width desired for calibration.

6.1.5 Place two sheets of the butcher paper over the pad assemblies in the area where the distributor tires will fall on the pad assemblies as shown in Fig. 2. These sheets should be positioned so they protect the pad assemblies from damage by the distributor tires as the truck passes over the pad assemblies. The sheets of butcher paper should adhere to the front and rear tires as the distributor passes over the pad assemblies leaving the pad assemblies available to receive the asphalt as it is sprayed onto the roadway surface.

6.1.6 As soon as the distributor has passed over the calibration pad assemblies, remove each pad assembly from the roadway.

6.1.7 Weigh each pad to the nearest 0.1 g. Record the weight of each pad and the pad position on the roadway on the report form.

6.2 *Test Method B*:

6.2.1 Insert one plastic bag into each elliptical can. Wrap the excess plastic over the top of the can and secure with a rubber band.

6.2.2 Record the weight of the elliptical can, plastic and rubber band assembly to the nearest 0.1 g.

6.2.3 Place one can assembly under each nozzle to be calibrated in the spraybar of the asphalt distributor. Ensure that the top of the can assembly is equal to or above the bottom of each nozzle.

6.2.4 Activate the spraybar so that when the asphalt is sprayed from each nozzle it is completely collected in each pre-weighed can assembly. Start the stopwatch the instant the asphalt begins to fill the can assembly.

6.2.5 Stop the flow of asphalt to the spraybar when the can assembly is approximately ¾ full. Stop the stopwatch the instant the asphalt stops flowing into the can assembly.

6.2.6 Record the weight of each can assembly in the proper space on the report form.

6.2.7 Record the time elapsed between the beginning and end of the flow of asphalt to the can assembly.

7. Procedure (Longitudinal Application Rate)

7.1 *Test Method A*:

7.1.1 Prepare the calibration pads and tape assemblies as described in 6.1.2 through 6.1.4. Position enough pads edge to edge down the pavement so the application rate in the long direction to be sprayed is covered as shown in Fig. 3. Position the pads so the distributor tires do not come in contact with the pads.

7.1.2 As soon as the distributor has sprayed asphalt on the calibration pads, remove to the weigh table.

7.1.3 Weigh each pad assembly to the nearest 0.1 g. Record the weight of each pad and the position on the report form.

7.2 *Test Method B*:

7.2.1 Test Method B (6.2) must be completed before conducting this section.

7.2.2 Determine forward velocity of asphalt distributor in feet per minute from the previously calibrated speedometer on the equipment or by measuring the time required for the equipment to pass over a measured length on the pavement. Record this rate as (*G*).

7.2.3 Measure the spray width. Record this distance in feet as (*H*).

8. Calculation (Transverse Application Rate)

8.1 *Test Method A*:

8.1.1 Subtract the tare weight of each pad assembly from the gross weight of each bituminous coated pad assembly. (Omit any pads not completely covered with bituminous material.)

[2] Non-woven, needle punched, heat fused on one side geotextiles by Phillips Fibers, Monsanto, and Amoco have been found to be suitable materials for this purpose.

[3] Butcher paper from Baumann Paper Co., Baumann Rd., Lexington, KY has been found to be suitable for this purpose.