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## Standard Practice for Sampling Bituminous Paving Mixtures<sup>1</sup>

This standard is issued under the fixed designation D979/D979M; 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.

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

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~~$\epsilon$  NOTE—Changes were made editorially throughout the text in July 2006.~~

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### 1. Scope

1.1 This practice covers sampling of bituminous paving mixtures at points of manufacture, storage, delivery, or in place.

~~1.2 The values stated in SI units are to be regarded as the standard. The values in parentheses are provided for information purposes only.~~

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>

C702 Practice for Reducing Samples of Aggregate to Testing Size

D2041 Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

D2234/D2234M Practice for Collection of a Gross Sample of Coal

D2726 Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures

D3665 Practice for Random Sampling of Construction Materials

D5361 Practice for Sampling Compacted Bituminous Mixtures for Laboratory Testing

D5444 Test Method for Mechanical Size Analysis of Extracted Aggregate

D6307 Test Method for Asphalt Content of Hot-Mix Asphalt by Ignition Method

D6925 Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor

D6926 Practice for Preparation of Bituminous Specimens Using Marshall Apparatus

D6927 Test Method for Marshall Stability and Flow of Bituminous Mixtures

E105 Practice for Probability Sampling of Materials

E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process

E141 Practice for Acceptance of Evidence Based on the Results of Probability Sampling

### 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *field sample, n*—a quantity of the material to be tested of sufficient size to provide an acceptable estimate of the average quality of a unit.

3.1.2 *increment, n*—part of a sample.

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<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and are the direct responsibility of Subcommittee D04.30 on Methods of Sampling.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.1.3 *lot, n*—a sizable isolated quantity of bulk material from a single source, assumed to have been produced by the same process (for example, a day's production or a specific mass or volume).

3.1.4 *test portion, n*—a quantity of the material of sufficient size extracted from the larger field sample by a procedure designed to ensure accurate representation of the field sample, and thus of the unit sampled.

3.1.5 *unit, n*—a batch or finite subdivision of a lot of bulk material (for example, a truck load or a specific area covered).

#### 4. Significance and Use

##### 4.1 General:

4.1.1 Sampling is equally as important as the testing, and the sampler shall take every precaution to obtain samples that will yield an acceptable estimate of the nature and conditions of the materials which they represent.

4.1.2 Samples for the development of preliminary data are obtained by the party responsible for the development of the data. Samples for control of the product at the source of manufacture or storage, or at the site of use, are obtained by the manufacturer, contractor, or other parties responsible for accomplishing the work. Samples for tests to be used in acceptance or rejection decisions by the purchaser are obtained by the purchaser or his authorized representative.

4.1.3 This standard shall not be used for the sampling of compacted bituminous paving mixtures. D5361 shall be used.

#### 5. Procedure

5.1 *Inspection*—The material shall be inspected to determine discernible variations. The seller shall provide equipment needed for safe and appropriate inspection and sampling.

5.2 *Sampling*—The procedures for selecting locations or times for sampling are described in Practice D3665.

5.2.1 *Sampling from a Conveyor Belt*—Stop the conveyor belt. Randomly select at least three areas of approximately equal size on the belt for sampling. In each of the locations to be sampled, insert templates, the shape of which conform to the shape of the belt. From the selected areas obtain approximately equal increments of material which will form a sample whose quantity equals or exceeds the minimum recommended in 5.3.2. Carefully scoop all material between templates into a suitable container.

5.2.2 *Sampling from Truck Transports*—By a random method, select the units to be sampled from the production of materials delivered. Obtain at least three approximately equal increments. Avoid sampling the extreme top surface. Select at random from the unit being sampled and combine to form a field sample whose quantity equals or exceeds the minimum recommended in 5.3.2. The sample may be obtained by collecting the increments with a scoop or shovel.

5.2.3 *Sampling from the Roadway Prior to Compaction*—When only one sample is to be taken, obtain at least three approximately equal increments, selected at random from the unit being sampled, and combine to form a field sample whose quantity equals or exceeds the minimum recommended in 5.3.2.

5.2.3.1 When three or more samples are to be taken in order to evaluate a lot of material, utilize a random method to determine the locations to be sampled. Select a sample, consisting of approximately three equal increments, from each location, assuring the quantity of each sample exceeds the minimum recommended in 5.3.2.

5.2.3.2 Take all increments or samples from the roadway for the full depth of the material, taking care to exclude any underlying material. When necessary, place templates on the existing roadway to exclude any underlying material. Clearly mark the specified area from which each increment or sample is to be removed. Templates which are placed before the mixture is spread will be a definite aid securing increments of approximately equal mass.

5.2.4 *Sampling from a Skip Conveyor Delivering Mixture to Bin Storage*—Select the units to be sampled from the skip conveyor by a random method based on the bin's storage capacity. Stop the skip conveyor immediately following pug mill discharge. Dig a furrow 150 mm (~~6 in.~~)[6 in.] in depth extending from the top to the bottom of the pile. Obtain three approximately equal increments from the top, middle, and bottom of the furrow depositing each increment in a container. The combined increments should form a field sample whose quantity equals or exceeds the minimum recommended in 5.3.2.

5.2.5 *Sampling from a Funnel Device Feeding a Conveyor for Mixture Delivery to Storage*—Select the units to be sampled from the funnel device by a random method based on the bin's maximum storage capacity. Obtain at least three approximately equal increments of material for each sample by passing a bucket or pan or other suitable container across the full flow of materials as it drops from the funnel device onto the conveyor. The combined portions should form a field sample whose quantity equals or exceeds the minimum recommended in 5.3.2.

5.2.6 *Sampling from Bituminous Cold Mix Stockpiles*—Cold mixes that are in a stockpile for some time may develop a crust on the surface of the pile. This crust should be removed to a depth of 100 mm, over an area of one square meter, to expose the unweathered mix. Stir the exposed stockpile and obtain three approximately equal samples selected at random from the unit being sampled, and combine to form a field sample whose quantity equals or exceeds the minimum recommended in 5.3.2.

5.2.6.1 When three or more samples are to be taken, sample in accordance with 5.2.3.1.

##### 5.3 Number and Quantities of Field Samples:

5.3.1 The number of field samples (obtained by one of the methods described in 5.2) required depends on the criticality of, and variation in, the properties to be measured. Designate each unit from which a field sample is to be obtained prior to sampling. The number of field samples from the production should be sufficient to give the desired confidence in test results.

NOTE 1—Guidance for determining the number of samples required to obtain the desired level of confidence in test results may be found in Method D2234/D2234M, Practice E105, Practice E122, and Practice E141.