

METHODS OF SAMPLING AND TESTING
MT 303-10
METHOD OF SAMPLING BITUMINOUS PAVING MIXTURES
(Modified AASHTO T 168)

1 Scope:

- 1.1 These methods cover sampling of bituminous paving mixtures at points of manufacturer, storage, or delivery.

2 Referenced Documents:

2.1 AASHTO Standards:

T168 Sampling Bituminous Paving Mixtures

ASTM Standards:

D979 Sampling Bituminous Paving Mixtures

MT Manual:

MT 309 Reducing Hot Mix Asphalt to Testing Size

WAQTC:

TM5

3 Securing Samples:

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

4 Inspection:

- 4.1 The material shall be inspected to determine discernable variations. The contractor shall provide equipment needed for safe and appropriate inspection and sampling.

5 Sampling:

- 5.1 *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 conforms to the shape of the belt. Obtain approximately equal increments of material from the selected areas, to form a sample whose quantity equals or exceeds the minimum recommended in 5.9.2. Carefully scoop all material between the templates into a suitable container.
- 5.2 *Sampling from Truck Transports* - Select the units to be sampled from the production of materials delivered. Obtain at least three approximately equal increments, selected at random, and combine to form a field sample whose quantity equals or exceeds the minimum recommended in 5.9.2. The sample may be obtained by collecting the increments with a scoop or shovel. *NOTE: Avoid sampling the extreme top surface.*
- 5.3 *Sampling from a Paver Auger* – Obtain samples from the end of the auger, using a square point shovel. Place the shovel in front of the auger extension, with the blade flat upon the surface to be paved over. Allow the front face of the auger stream to cover the shovel, and remove the shovel before the auger reaches the shovel by lifting it upward as vertically as possible. Obtain approximately three equal increments of material to form a sample whose quantity equals or exceeds the minimum recommended in 5.9.2.

5 Sampling: (continued)

- 5.4** *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, and combine to form a field sample whose quantity equals or exceeds the minimum recommended in 5.9.2.
- 5.4.1** When three or more samples are to be taken in order to evaluate a lot of material, utilize a random method to select the locations to be sampled. Select a sample from each location; assuring the quantity of each sample exceeds the minimum recommended in 5.9.2.
- 5.4.2** 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 of sample is to be removed. Templates, which are placed before the mixture is specified, will be a definite aid in securing approximately equal increment weights.
- 5.5** *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 6 in. deep 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 portion in a container. The combined portions should form a field sample whose quantity equals or exceeds the minimum recommended in 5.9.2.
- 5.6** *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 the material 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 5.9.2.
- 5.7** *Sampling from the Roadway after Compaction* - Select the units to be sampled by a random method from the material in place. Obtain at least three approximately equal increments selected at random from the unit being sampled. Test each increment and average the test results to determine the acceptability. Take all the increments from the roadway for the full depth of the material, taking care to exclude any underlying material. Each increment shall be obtained by coring, sawing, or other methods in such a manner as to ensure a minimum of disturbance of the material.
- 5.8** *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 4 inches, over an area of one square yard, to expose the un-weathered 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 5.9.2.
- 5.9** ***Number and Quantities of Field Samples:***
- 5.9.1** The number of field samples (obtained by one of the methods described in 5) 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.
- 5.9.2** A guide to the quantity of material in field samples is given in Table 1. The quantities depend on the type and number of tests to which the material is to be subjected, and sufficient material must be obtained to provide for the proper execution of standard control and acceptance tests.

5.9 Number and Quantities of Field Samples: (continued)

Table 1 – Guide for Estimating the Quantity of Sample

Nominal Maximum Size of Aggregates	Approximately Weight of Uncompacted Mixture, Min. lb (Kg)	Approximate Area of Compacted Mixture, Min. in ² (cm ²)
No. 8 (2.36 mm)	4 (1.8)	36 (232)
No. 4 (4.75 mm)	4 (1.8)	36 (232)
3/8 in. (9.5 mm)	8 (3.6)	36 (232)
1/2 in. (12.5 mm)	12 (5.4)	64 (413)
3/4 in. (19.0 mm)	16 (7.3)	100 (645)
1 – in. (25.0 mm)	20 (9.1)	144 (929)
1 ½ in. (38.1 mm)	25 (11.3)	144 (929)
2 – in. (50.0 mm)	35 (15.9)	255 (1453)

- **Nominal maximum size – One sieve size larger than the first sieve to retain more than 10 percent.**

6 Shipping Samples:

6.1 Transport samples in containers constructed to preclude loss or contamination of any part of the sample, or damage to containers from mishandling during shipment.

6.2 Samples shall have individual identification attached giving the information required by the sample user. Typical information that may be useful could include, but not necessarily be limited to the following:

- The project for which the material is to be used, giving the project number, highway route number, county, and other pertinent geographical information.
- Source of the sample, including for plant-mix samples, the name of the owner or operator of the plant, the location of the plant, type of plant, size of batch, and identification of the asphalt and mineral aggregates used in the mixture.
- For samples taken from the roadway, include both the station number and the location transversely in the pavement, also whether sample from completed pavement, windrow, etc.
- Quantity represented.
- Name and title of the person taking the sample.
- Date of most recent mixing, if road-mixed.
- Date sampled.
- Name and address of the person submitting the sample.
- Purpose for which the sample was taken.
- To whom the report is to be made.
- Completed form 98.