DRAINDOWN CHARACTERISTCS
IN
UNCOMPACTED ASPHALT MIXTURES
AASHTO T 305

SCOPE

This test procedure determines the amount of draindown in an uncompacted asphalt mixture when the sample is held at elevated temperatures comparable to those encountered during the production storage, transport, and placement of the mixture. The test is particularly applicable to mixtures such as open-graded courses and Stone Matrix Asphalt.

SUMMARY OF TEST

A sample of asphalt mixture is placed in a wire basket, which is positioned on a plate or other suitable container of known weight. The sample, basket, and plate or container are placed in an oven for a specified amount of time at the production temperature. At the end of the heating period, the basket containing the sample is removed from the oven along with the plate or container and the weight of the plate or container is determined. The amount of draindown is considered to be that portion of material that separates itself from the sample as a whole and is deposited outside the wire basket. The material that drains may be composed of either binder or a combination of binder and fine aggregate.

Apparatus

Forced draft oven, capable of maintaining the temperature in a range from 250-350°F (120-175°C) within ± 3.6°F (± 2°C).

Plates or containers, capable of withstanding oven temperatures required for the test and the appropriate size for the basket.

Standard basket, 165 ± 16.5 mm deep, 108 ± 10.8 mm wide, with a basket bottom 25 ± 2.5 mm from the bottom of the wire basket assembly. The basket shall be constructed using standard 0.25 inch (6.3 mm) sieve cloth as specified in AASHTO M 92.

Balance, general purpose G_2 in accordance with AASHTO M 231.

Spatulas, and trowels, as needed.

Sample Preparation

Samples will be obtained from trucks during plant production and reduced to test sample size in accordance with AASHTO T 248. Duplicate samples are obtained and tested.

Procedure

1. Place the sample in the tared standard basket. The sample shall not be consolidated or otherwise disturbed after the mixture is transferred to the basket.

2. Weigh and record the sample weight to the nearest 0.1 g (Figure 1)

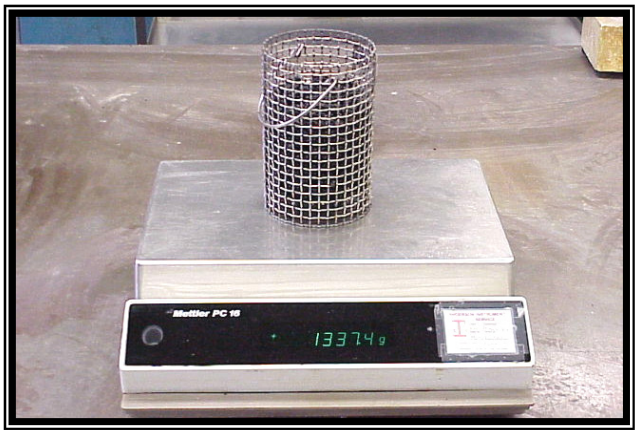


Figure 1
Weighing Sample

3. Weigh the plate or container to the nearest 0.1 g.

4. Place the basket on the plate or container and measure the temperature of the mixture.

5. Place the basket and plate or container in the oven at the plant production temperature for 1 hour ± 5 minutes (Figure 2). If the sample has cooled more than 77°F below the test temperature, the test should be conducted for 70 ± 5 minutes.

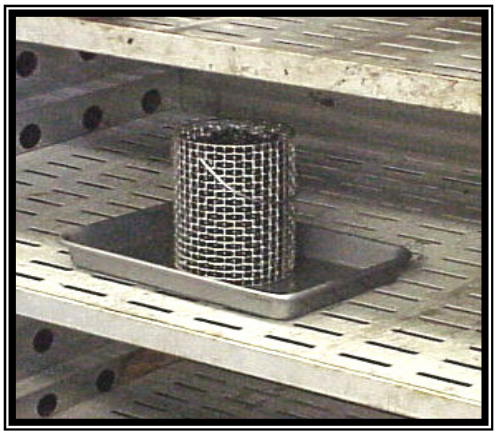


Figure 2
Sample in Oven

6. After the designated time in the oven, remove the basket and plate or container and weigh the plate or container to the nearest 0.1 g.

Calculations

Calculate the percent drainage by subtracting the initial plate or container weight from the final plate or container weight and divide by the initial total sample weight. Multiply the result by 100 to obtain a percentage.

$$\text{Drainage} = \frac{A - B}{C} \text{ x } 100$$

where:

A = Final weight of plate or container, g
B = Initial weight of plate or container, g
C = Initial total sample weight, g

The percent drainage is the average of two tests.

Example

A = 1289.3 g
B = 1285.6 g
C = 1150.8 g

$$\text{Drainage} = \frac{1289.3 - 1285.6}{1150.8} \text{ x } 100$$

$$= 0.32\ \%$$