

**METHODS OF SAMPLING AND TESTING**  
**MT 312-09**  
**METHOD OF DETERMINING MOISTURE CONTENT**  
**OF BITUMINOUS MIXTURES**  
**(Modified AASHTO T 329)**

**1 Scope:**

- 1.1 This method covers the determination of the moisture content of bituminous mixtures in accordance with AASHTO T329.

**2 Referenced Documents:**

**2.1 MT Manual:**

- MT-303 Sampling Bituminous Paving Mixtures  
MT-309 Reducing Samples of Hot Mix Asphalt to Testing Size

**3 Apparatus:**

- 3.1 Forced Air, Ventilated, or Convection Oven, or Hot Plate – capable of maintaining compaction temperature range.
- 3.2 Thermometer – with a temperature range from 50°F to 400°F (10°C to 204.4°C).
- 3.3 Balance or scale – with a capacity of at least 2 Kg., readable to 0.1 gram.
- 3.4 Sample container – Not affected by heat and of sufficient size to contain a test sample of at least 1,000-g without danger of spilling.

**4 Sample:**

- 4.1 The test sample shall be obtained in accordance with MT-303, and reduced in accordance with MT- 309. The size of the test sample shall be a minimum of 1000 g.

**5 Procedure:**

- 5.1 Determine and record the mass of the sample container to the nearest 0.1 g.
- 5.2 Record the temperature of the test sample.
- 5.3 Place the test sample in the sample container, and determine and record the total mass of the sample container and the test sample to the nearest 0.1 g.
- 5.4 Calculate the initial, moist mass of the test sample by subtracting the mass of the sample container determined in Sec 5.1 from the total mass of the sample container and the test sample determined in Sec 5.3.
- 5.5 Dry the test sample to a constant mass in the sample container.

*Note 1 - Constant mass shall be defined as the mass at which further drying does not alter the mass by more than 0.05 percent. Set the oven to a minimum of 105 ± 5°C (221 ± 9°F). In no case should the Job Mix Formula (JMF) mixing temperature be exceeded. The sample shall be initially dried 90 minutes, and its mass determined at that time and at 30-minute intervals after that until a constant mass is reached.*

- 5.6 Cool the sample container and test sample to approximately the same temperature as determined in Sec 5.2.

**5 Procedure:** (continued)

**5.7** Determine and record the total mass of the sample container and test sample to the nearest 0.1 g.

*Note 2 - Do not attempt to remove the test sample from the sample container for the purposes of determining mass.*

**5.8** Calculate the final, dry mass of the test sample by subtracting the mass of the sample container determined in Sec 5.1 from the total mass of the sample container and the test sample determined in Sec 5.7.

*Note 3 - Moisture content and the number of samples in the oven will affect the rate of drying at any given time. Placing wet samples in the oven with nearly dry samples could affect the drying process.*

**6 Calculations:**

**6.1** Calculate the moisture content, as a percentage, using the following formula.

Percent of Initial, Moist Mass: 
$$M = \frac{M_i - M_f}{M_f} \times 100$$

Where:

$M$  = % Moisture

$M_i$  = initial, moist mass

$M_f$  = final, dry mass

Example:  $M_i = 1001.3\text{g}$

$M_f = 991.7\text{g}$

$$\text{Moisture Content} = \frac{1001.3\text{g} - 991.7\text{g}}{991.7\text{g}} \times 100 = 0.970, \text{ say } 0.97\%$$

**7 Report:**

**7.1** Report the moisture content to 0.01 percent.