

## **MOISTURE CONTENT OF BITUMINOUS MIXTURES**

(An Arizona Method)

### **1. SCOPE**

- 1.1 This method is used to determine the percent moisture in bituminous mixtures. The option of using a conventional oven or a microwave oven is provided. In case of dispute, the conventional oven shall be utilized.
- 1.2 This test method may involve hazardous material, operations, and equipment. This test method does not purport to address all of the safety problems associated with its use. It is the responsibility of the user to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

### **2. APPARATUS**

- 2.1 Requirements for the frequency of equipment calibration and verification are found in Appendix A3 of the Materials Testing Manual.
- 2.2 Suitable sample containers for use in testing with the conventional oven or microwave oven.
- 2.3 Oven - A thermostatically controlled oven capable of maintaining a temperature of  $290 \pm 10$  °F; or, a microwave oven capable of variable heat intensity settings.
- 2.4 A balance or scale capable of measuring the maximum weight to be determined, accurate to at least 0.1 gram.

### **3. PROCEDURE (CONVENTIONAL OVEN)**

- 3.1 Obtain a representative  $1000 \pm 50$  gram sample in accordance with ARIZ 416.
- 3.2 Record the tare weight of the container to the nearest 0.1 gram.

- 3.3 Place sample in the container and weigh. Determine and record the wet weight of sample to the nearest 0.1 gram as "f".
- 3.4 Place container and sample in a  $290 \pm 10$  °F oven and initially dry for a minimum of 1 hour. Weigh the container and sample. Record the weight to the nearest 0.1 gram.
- 3.5 Continue drying and weighing until a constant weight is obtained; being the weight at which further drying does not alter the weight more than 0.1 gram at intervals of a minimum of 30 minutes.
- 3.6 After constant weight is obtained, cover sample and allow to cool  $30 \pm 10$  minutes at room temperature. Weigh and determine and record the dry weight of sample to the nearest 0.1 gram as "g".
- 3.7 Proceed to section 5 for moisture content calculation.

#### **4. PROCEDURE (MICROWAVE OVEN)**

- 4.1 Obtain a representative  $1000 \pm 50$  gram sample in accordance with ARIZ 416.
- 4.2 Record tare weight of the container to the nearest 0.1 gram.
- 4.3 Place sample in the container and weigh. Determine and record the wet weight of sample to the nearest 0.1 gram as "f".
- 4.4 Dry sample until a constant weight is obtained. The sample is considered to be at constant weight when further drying causes, or would cause, a difference in weight of not more than 0.1 gram. The sample shall be heated in such a manner that controls the intensity of heat generated to prevent splattering, aggregate breakage, and asphalt being "burned off". The method used with a microwave oven shall give results similar to those achieved with a conventional oven.
- 4.5 After constant weight is obtained, cover sample and allow to cool  $30 \pm 10$  minutes at room temperature. Weigh and determine and record the dry weight of sample to the nearest 0.1 gram as "g".

## 5. CALCULATION

- 5.1 Calculate the percent moisture, "h", and record to the nearest 0.01% as shown below.

$$h = \frac{f - g}{f} \times 100$$

Where: h = Percent Moisture  
f = Wet weight of sample  
g = Dry weight of sample