

5.16.43 MOISTURE CONTENT OF ASPHALT MIXTURES OR MINERAL AGGREGATES -
MICROWAVE OVEN METHOD (Kansas Test Method KT-43)

a. SCOPE

This method describes a procedure for determining the amount of moisture present in asphalt mixtures or graded mineral aggregates used in asphalt mixtures. Use of this method is limited to asphalt mixtures containing paving grade asphalts. Use of this method with cut-back asphalts or emulsions is not authorized. KT-43 reflects testing procedures found in AASHTO T 255.

b. REFERENCED DOCUMENTS

b.1. KT-1; Sampling Aggregates

b.2. KT-25; Sampling Plant Mixed Asphalt Mixtures

b.3. AASHTO M 231; Weighing Devices Used in the Testing of Materials

b.4. AASHTO T 255; Total Moisture Content of Aggregate by Drying

APPARATUS

c.1. Microwave Oven capable of holding 4,000 g sample.

c.2. Sample containers must be paper, glass or ceramic.

c.3. The balance shall conform to the requirements of AASHTO M 231 for G5.

c.4. Riffle Splitter, 25 mm (1 in) wide riffles - optional.

c.5. Asbestos gloves.

c.6. A 4 L (1 gal) friction lid can.

d. SAMPLE PREPARATION

d.1. Secure a sample representative of the moisture content in the material being tested, and in the case of normal-weight aggregate, weighing not less than the amount listed in Table 1. Protect the sample from loss of moisture prior to weighing.

Table 1
Sample Size for Normal-
Weight Aggregate

Nominal Maximum Size of Aggregate mm (in.) ^a	Weight of Sample Min. kg ^b
4.75 (No.4)	0.5
9.5 (3/8)	1.5
12.5 (1/2)	2.0
19.0 (3/4)	3.0
25.0 (1)	4.0

^a Based on sieves with square openings.

^b To determine the minimum sample weight for lightweight aggregate, multiply the value by the approximate dry-loose unit weight of the aggregate in kg/m³ and divide by 1600.

e. TEST PROCEDURE

e.1. Place the sample in a tared sample container and weigh to the nearest 1.0 g and record the mass.

e.2. Place the sample in a microwave oven and turn oven on.

e.3. After 5 minutes, turn oven off, remove the sample container, weigh the sample and container to the nearest 1.0 g and record mass.

e.4. Return the sample and container to the oven, turn oven on and dry the sample for an additional 5 minutes.

e.5. After 5 minutes, turn oven off, remove the sample container and weigh the sample and container to the nearest 1.0 g and record the mass.

e.6. The sample is thoroughly dry when further heating causes, or would cause, less than 0.1 percent additional loss in weight.

e.7. Weigh the dried sample to the nearest 0.1 percent after it has cooled sufficiently not to damage the balance.

CAUTION: WHEN USING A MICROWAVE OVEN, OCCASIONALLY MINERALS ARE PRESENT IN AGGREGATES WHICH MAY CAUSE THE MATERIAL TO OVERHEAT AND EXPLODE. IF THIS OCCURS IT CAN DAMAGE THE MICROWAVE OVEN.

f. CALCULATIONS

f.1. Calculate total moisture content as follows:

$$p = 100(W-D)/D$$

where:

p = moisture content of sample, percent

W = weight of original sample, g, and

D = weight of dried sample, g.