

KTMR-27 MODIFIED SPECIFIC GRAVITY AND ABSORPTION OF AGGREGATE
(Kansas Central Lab Test KT-MR-27)

a. SCOPE

This method of test determines the specific gravity and absorption of On Grade Coarse Aggregate. KTMR-27 closely follows the procedures found in AASHTO T 85.

b. REFERENCED DOCUMENTS

b.1. AASHTO M 231: Weighing Devices Used in the Testing of Materials

b.2. AASHTO T 85: Specific Gravity and Absorption of Coarse Aggregate

c. APPARATUS

b.1. Weighing device meeting AASHTO M 231 Class G2, with a capacity of 3000 g.

b.2. Bucket approximately 203.2 mm (8 in) in diameter and 203.2 mm (8 in) in height.

b.3. Container equipped with an overflow device for immersing the bucket in water.

b.4. Apparatus for suspending the bucket from the center of the weighing device.

b.5. Oven capable of maintaining a uniform temperature of $110 \pm 5^{\circ}\text{C}$ ($230 \pm 9^{\circ}\text{F}$).

b.6. Drying pans

b.7. Absorbent cloth

c. SAMPLE PREPERATION

c.1. Select a portion of the test aggregate by splitting or quartering. The minimum mass of the sample shall be as in Table 1.

Table 1

Individual Sieve Size	Mass (g)
Passing 19.0 mm ($3/4$ in) and retained on 12.5 mm ($1/2$ in)	2800
Passing 12.5 mm ($1/2$ in) and retained on 9.5 mm ($3/8$ in)	2800

c.2. Wash the sample over the 1.7 mm (No. 12) sieve to remove dust and other inherent coatings.

c.3. Dry to a constant mass in the oven.

c.4. Recombine the two fractions to provide a sample meeting the gradation in Table 2.

Table 2

Sieve Size	Cumulative Mass Retained (g)
19.0 mm ($3/4$ in)	0
12.5 mm ($1/2$ in)	2250
9.5 mm ($3/8$ in)	4500

d. PROCEDURE

d.1. Immerse the sample in water and stir vigorously. Soak for 24 ± 4 hours.

d.2. Remove the sample from the water and bring to a saturated surface-dry condition by rolling the sample in a dampened absorbent cloth. A saturated surface-dry condition exists when the aggregate surface appears moist but not shiny.

d.3. Weigh the sample immediately upon reaching the saturated surface-dry condition. All masses should be to the nearest gram.

d.4. After obtaining the saturated surface-dry mass, immerse the aggregate in water stirring to remove any entrapped air and weigh. Maintain the water bath temperature at $25 \pm 1^\circ\text{C}$ ($77 \pm 2^\circ\text{F}$).

d.5. Dry the sample to a constant mass in the oven at $110 \pm 5^\circ\text{C}$ ($230 \pm 9^\circ\text{F}$).

d.6. Let sample cool to room temperature and weigh.

e. CALCULATIONS

e.1. Bulk Specific Gravity = $A/(B-C)$

e.2. Bulk Specific Gravity Saturated Surface-Dry = $B/(B-C)$

e.3. Apparent Specific Gravity = $A/(A-C)$

e.4. Absorption (%) = $100 * (B-A)/A$

Where: A = Mass in grams of oven dried sample in air

B = Mass in grams of saturated surface-dry sample in air

C = Mass in grams of saturated sample in water