

SAMPLING HOT MIX ASPHALT (HMA) AFTER COMPACTION (OBTAINING CORES)

WAQTC TM 11

Scope

- This method describes the process for removal of a core sample of compacted hot mix asphalt (HMA) from a pavement for laboratory testing. Cores may range in diameter from 2 in. to 12 in.
- The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.
- Safety— This method does not purport to address all of the safety problems associated with its use. This test method involves potentially hazardous conditions.

Significance

- Samples obtained in accordance with the procedure may be used for measuring pavement thickness and density. Additional testing may be performed as required by the agency.
- When cores are used to determine nuclear gauge correlation, see WAQTC TM 8.
 - Nuclear gauges see WAQTC TM 8
 - Electronic gauges see AASHTO TP 68
- When cores are used to determine pavement density, the Bulk Specific Gravity (G_{mb}) is determined according to WAQTC FOP for AASHTO T 166 / T 275.

Apparatus

- Coring Machine – A motor driven core machine shall be used to obtain the sample. The device shall be capable of obtaining a core to the full depth of the HMA and mounted on a platform such that the core barrel is perpendicular to the pavement during the cutting process. A Core Drill Machine of sufficient horsepower and depth to minimize distortion of the compacted cores of HMA.
- Core Bit – The cutting edge of the core drill bit shall be of hardened steel or other suitable material with diamond chips embedded in the metal cutting edge. The core barrel inside diameter shall be as specified.
- Separation Equipment – A saw or other method(s) that provides a clean smooth plane representing the layer to be tested.

- Retrieval Device – A device for removing core samples that will preserve the integrity of the core. The device may be a steel rod of suitable length and with a diameter that will fit into the space between the core and the pavement material. There may be a 90 degree bend at the top to form a handle and a 90 degree bend at the bottom, approximately 2 in. (50 mm) long, forming a hook to assist in the retrieval of the core or other suitable device.

Material

- Cooling agent such as: water, ice, dry ice, or liquid nitrogen.

Test Site Location

- The number of cores obtained shall be determined by the test procedure or agency requirements.
- Core location(s) shall be determined by the agency.

Procedure

1. For freshly compacted HMA, the core shall be taken when the material has had sufficient amount of time to cool to prevent damage to the core.
2. To accelerate the coring process, a cooling agent may be used.
3. Place the coring machine such that the core bit is over the selected location.
4. Provide a means such as water or air to aid in the removal of cuttings and to minimize the generation of heat caused by friction.
5. Keep the core bit perpendicular to the HMA surface during the coring process.
Note #1: If any portion of the coring machine shifts during the operation, the core may break or distort.
6. Apply constant downward pressure on the core bit. Failure to apply constant pressure, or too much pressure, may cause the bit to bind or distort the core.
7. Continue the coring operation until the desired depth is achieved.
8. Use a retrieval device to obtain the core.
9. Clearly label the core.

Filling Core Holes

- The hole made from the coring operation shall be filled with a material that will not become dislodged.

Transporting

- Transport cores on a smooth surface, top side down in a container(s) that prevents damage from jarring, rolling or impact with any object.
- Prevent cores from freezing or from excessive heat, 54° C (130°F), during transport.

Note #2: In extreme ambient temperature conditions, an insulated container should be used during transport.

Layer Separation

- Separate two or more pavement courses, lifts, or layers; by the use of separation equipment on the designated lift line.

Note #3: Lift lines are often more visible by rolling the core on a flat surface.

Thickness Determination

- Measure the thickness of the designated lift to 0.10 in. (3 mm). Three or more measurements shall be taken around the lift and averaged.

Report

- On forms approved by the agency
- Date
- Coring location
- The lift / layer being evaluated
- Material type
- Average thickness

