

**Standard Method of Test for
Field Determination of Stability of Hot Mix Asphalt Mixtures
by the Gyrotory Method**
SCDOT Designation: SC-T-96 (9/08)

1. SCOPE

- 1.1. This method covers the field procedure for determining stability of Hot Asphalt Mixes when required by specifications.

2. REFERENCE DOCUMENTS

- 2.1. AASHTO M-231, AASHTO T-312, SC-T-62 and SC-T-101

3. APPARATUS

- 3.1. Compaction assembly - breaking head (6 inch or 150mm), gyrotory compactor and molds meeting AASHTO T-312.
- 3.2. Thermostatically controlled oven - capable of maintaining 95°C to 150°C (200°F to 300°F).
- 3.3. Hot plate - capable of maintaining 95°C to 150°C (200°F to 300°F).
- 3.4. Balance of sufficient capability (12 kg capacity and sensitive to 0.1gm) meeting the requirements of AASHTO M-231.
- 3.5. Water bath of sufficient capacity capable of maintaining 60±1.0°C (140±1.8°F). Bath shall contain potable water.
- 3.6. Misc. Items: Calibrated dial thermometer (range of 10 to 204°C (50 to 400°F) and sensitive to 2.8°C (5°F) is recommended), circular paper disks (150 mm diameter).

4. TEST SPECIMENS

- 4.1. Minimum of sixty minutes prior to molding specimens, heat mold assembly (base plate, mold, and collar) to a temperature between 145°C (290°F) and 150°C (300°F) in a thermostatically controlled oven.
- 4.2. Check temperature of mix in truck. If temperature is between 146°C (295°F) and 157°C (315°F), take a large enough sample for an ignition oven test, MSG, two gyrotory specimens, as well as enough sample for SCDOT verification testing.
- 4.3. Remove mold from oven, place a circular 150 mm (6 in.) diameter disc of paper in bottom before the mixture is introduced.
- 4.4. Weigh approximately 3200 -4000 grams of the sample to ensure that you get a sample that meets height requirements of 90-100mm after desired number of gyrations (most job mixes will have footnote of estimated weight).

- 4.5. Introduce the hot mix into mold. Insert a dial thermometer in the mix and move thermometer around the mold to insure an accurate reading. The mix temperature before compacting should be $146 \pm 3^{\circ}\text{C}$ ($295 \pm 5^{\circ}\text{F}$). If temperature is below 143°C (290°F), discard this batch and repeat process, but more quickly to reduce the heat loss. Place a circular 150 mm (6 in.) diameter disc of paper on top of the mixture.
- 4.6. Apply the number of gyrations specified on the job mix with a gyratory compactor.
- 4.7. Remove the specimen from the gyratory and allow the specimen to be air cooled to room temperature.
- 4.8. Make an additional specimen using the same material as obtained in step 4.2. Dig deep down into the bucket or quarter the mixture quickly to ensure material is still within temperature requirements.

5. PROCEDURE

- 5.1. Check to be sure that specimens are between 90-100mm in final height. If they do not meet this criterion, discard the samples and repeat the process with more or less material so that specimens fall within height guidelines.
- 5.2. Place the specimens and testing mold in a water bath equipped with a mechanical stirrer, at a temperature of $60 \pm 1.0^{\circ}\text{C}$ ($140 \pm 1.8^{\circ}\text{F}$) for a period of 35 ± 5 minutes.
- 5.3. Check the guide rods to see that the upper test head slides freely over them. Remove the specimens from the water bath and place in the lower segment of the breaking head. Place the upper segment of the breaking head on the specimen. The testing head and specimen are then placed in the stability machine.
- 5.4. Apply load to the specimen until the maximum load is reached and load decreases as indicated by the dial or strip recorder. Record the maximum deflection noted on the testing machine chart, or refer to chart for stability value. The elapsed time for the test from removal of the test specimen from the water bath to the maximum load determination shall not exceed 30 seconds.

6. CALCULATIONS

- 6.1. None

7. REPORT

- 7.1. Record field stability on Form 400.03 – Ignition Oven Worksheet and report on Form 400.05 – Daily Plant Report. HMA JMF to be shown on Form MD 410 and reported on Form MD 416.