Standard Method of Test for

Porosity of Compacted Open Graded Friction Course (OGFC) Mixture Specimens

SC Designation: SC-T-128 (12/13)

1.   SCOPE

1.1   This method outlines the procedure to measure the porosity (water accessible voids) of compacted asphalt concrete specimens. This procedure is applicable to OGFC mixtures.

2.   REFERENCED DOCUMENTS

2.1   SC Test Procedures: SC-T-68

2.2   AASHTO Procedures: M 231

3.   APPARATUS

3.1   Balance, meeting the requirements of AASHTO M 231, capable of weighing gyratory specimens, sensitive to 0.1 gm., equipped with suitable suspension apparatus and holder to permit weighing the specimen while suspended from the center of the scale pan of balance.

3.2   Thermometer – glass or thermocouple, accurate to the nearest 0.1° F.

3.3   Water bath and under water basket-hook for determining mass underwater – meets requirements in SC-T-68.

3.4   Measurement Calipers – Digital, accurate to the nearest 0.1cm.

4.   TEST SPECIMENS

4.1   Specimens may be cored from the roadway or compacted in the laboratory.

5.   PROCEDURE

5.1   Record the dry mass of the specimen to the nearest 0.1g (W_{dry}).

5.2   Measure and record the height and diameter of the specimen at three representative locations to the nearest (0.1cm). Calculate the average height (H_{avg}) and diameter (D_{avg}) of the specimen.

5.3   Submerge the specimen in 77°F +/- 1.8°F water for 30 minutes.

5.4   After 30 minutes, while keeping the specimen submerged, invert the specimen 180° (flip it over).

5.5   While keeping the specimen fully submerged, tap the specimen against the bottom of the tank 5 times (without damaging the specimen). Then invert the specimens 180° and place back into specimen holder.

5.6 Measure the submerged mass of the specimen under water without exposing it to air and record (W_{sub}).

6. CALCULATIONS

6.1 Calculate the volume of the specimen (cm³) using Equation below.

$$V_T = \frac{\left(D_{avg}\right)^2 \times \pi \times H_{avg}}{4}$$

6.2 Calculate the porosity of the specimen using Equation below.

$$P(\%) = \left[1 - \frac{\frac{\left(W_{dry} - W_{sub}\right)}{0.9970479}}{V_T}\right] \times 100$$

7. REPORT

7.1 Average specimen diameter to the nearest 0.1cm.

7.2 Average specimen height to the nearest 0.1cm.

7.3 Porosity to the nearest 0.1%.