

Percent Air Voids in Compacted Asphalt Mixtures

ASTM D3203/D3203M – 17

4. Significance and Use

4.1 The percent of air voids in an asphalt mixture is used as one of the criteria in the design methods and for evaluation of the compaction imparted in asphalt paving projects.

NOTE 1—The text of this test method references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the test method.

NOTE 2—The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of Specification D3666 are generally considered capable of competent and objective testing/sampling/inspection, etc. Users of this standard are cautioned that compliance with Specification D3666 alone does not completely ensure reliable results. Reliable results depend on many factors; following the suggestions of Specification D3666 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.

5. Sampling

5.1 Samples for testing shall consist of specimens from laboratory-molded mixtures or cores from field-compacted mixtures.....

6. Procedure

6.1 For dense asphalt mixtures, determine the bulk specific gravity of the compacted mixture by Test Method D1188, by Test Method D2726, or by Test Method D6752.....

6.2 For open asphalt mixtures, determine the density of a regularly shaped specimen of compacted mixture from its dry mass (in grams) and its volume (in cubic centimetres)

6.2.1 Obtain the height of the specimens by Test Method D3549.....

6.2.2 Measure the diameter of the specimen at four locations and determine the average.....

6.2.3 Calculate the volume of the specimen based on the average height and diameter measurement.....

6.2.4 Convert the density to bulk specific gravity by dividing by 0.99707 g/cm³ or 997 kg/m³, the density of water at 25 °C.....

NOTE 3—The density measurements should be converted to the appropriate SI units before performing the calculation in 6.2.4.

6.3 Determine the theoretical maximum specific gravity by Test Method D2041 or by Test Method D6857 on a comparable asphalt mixture to avoid the influence of differences in gradation, asphalt content, etc.....

6.4 For referee purposes, determine both the bulk specific gravity and the theoretical maximum specific gravity on approximately equal portions of the same sample of compacted asphalt mixture.....

7. Calculation

7.1 Calculate the percent air voids in a compacted asphalt mixture as follows:

Percent air voids = 100 (1 – (bulk sp gr/theoretical maximum sp gr)) (1)

7.2 If the percent air voids of a specimen tested according to 6.1 equals or exceeds 10 %, the specimen shall be retested according to 6.2 as an open asphalt mixture.....

Comments