
Standard Method of Test for

Determining Degree of Pavement Compaction of Bituminous Aggregate Mixtures

AASHTO Designation: T 230-68 (2000)



1. SCOPE

- 1.1. This method describes the procedures for determining the degree of pavement compaction of a bituminous-aggregate mixture as related to standard specimens composed of the same materials and within the tolerance of the job mix formula.
- 1.2. The values stated in SI units are to be regarded as the standard.

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- T 166, Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens
 - T 167, Compressive Strength of Bituminous Mixtures
- 2.2. *ASTM Standard:*
- D 2950, Density of Bituminous Concrete in Place by Nuclear Method

3. SAMPLING AND TESTING

- 3.1. Removing the sample from the compacted pavement.
- 3.1.1. *Equipment:*
- 3.1.1.1. Any tool suitable for removing intact a square, circle, or core of compacted pavement for the full depth of the course or courses. An impact chisel, a diamond blade pavement saw, a steel density ring, or a diamond bit core drill are suitable for this purpose. The core drill should be equipped to core and retrieve specimens approximately 100 to 150 mm (4 or 6 in.) in diameter. The density ring shall be approximately 150 mm (6 in.) I.D. and approximately 6.4 mm ($\frac{1}{4}$ in.) less in height than the thickness of the compacted course.
- 3.1.1.2. A rigid plate or suitable container large enough to hold the sample without distortion after it is removed from the pavement.

- 3.1.2. *Procedure:*
- 3.1.2.1. *Method A*—A suitable material of appropriate size for preventing the bond between pavement layers shall be placed and its location identified. After pavement has been laid and compacted, cut and remove a square sample from above location. (See Appendix A for typical method.)
- 3.1.2.2. *Method B*—When the sample is to be cored, pre-identifying the location of the sample may be eliminated. When the coring operation has been completed, carefully remove sample by use of the core retriever. When the maximum nominal size aggregate in the pavement is 25 mm or less, a 100-mm (4-in.) diameter bit or larger shall be used. When the maximum nominal size aggregate is over 25 mm, a 150-mm (6-in.) diameter bit shall be used.
- 3.1.2.3. *Method C*—The sample may be obtained by the Density Ring Method. (See Appendix B.)
- 3.1.2.4. After the pavement sample has been cut or cored, it should be carefully removed. Care should be exercised that the sample is not distorted, bent, cracked, or in any way changed from its physical condition as it was before removal from the pavement. The sample should then be forwarded to the laboratory. If for any reason there should be a delay in shipping the sample to the laboratory, it should be placed in a safe, cool place.
- 3.1.2.5. Complete identification information should be submitted with the sample.
- 3.2. *Determination of Specific Gravity of the Sample Taken From the Compacted Pavement:*
- 3.2.1. The specific gravity of the sample shall be determined in accordance with T 166.
- 3.3. Determination of specific gravity/density of the compacted pavement by nuclear gauge.
- 3.3.1. The specific gravity/density of the compacted pavement may be determined in place by testing in accordance with ASTM D 2950, "Density of Bituminous Concrete in Place by Nuclear Method."
- 3.4. *Standard Specimens:*
- 3.4.1. Standard specimens shall be prepared from a representative sample of the mix to be tested for compaction, in accordance with T 167 or other acceptable methods.
- 3.5. Determination of the specific gravity of a standard laboratory compacted specimen.
- 3.5.1. The specific gravity of the standard specimens shall be determined in accordance with T 166.

4. DEGREE OF PAVEMENT COMPACTION

- 4.1. The degree of compaction shall be determined by dividing the specific gravity of the pavement specimens by the specific gravity of the standard specimens and shall be expressed as a percentage:

$$\text{Degree of Compaction} = \frac{\text{Pavement Sp Gr}}{\text{Standard Specimen Sp Gr}} \times 100 \quad (1)$$