
Standard Practice for

Evaluation of Superpave™ Gyratory Compactors (SGCs)

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1. SCOPE

- 1.1. This procedure covers the method for evaluating the suitability of a Superpave™ gyratory compactor (SGC) with respect to its ability to produce compacted specimens at various compaction levels according to T 312, which are equivalent to two models¹ of gyratory compactors which have been in use by most of the State DOTs for the last four years and are known to have met the specification.
- 1.2. *This practice may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this procedure to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.*

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
- M 323, Superpave Volumetric Mix Design
 - R 35, Superpave Volumetric Design for Hot-Mix Asphalt (HMA)
 - T 166, Bulk Specific Gravity of Compacted Hot-Mix Asphalt Mixtures Using Saturated Surface-Dry Specimens
 - T 209, Theoretical Maximum Specific Gravity and Density of Hot-Mix Asphalt Paving Mixtures
 - T 312, Preparing and Determining the Density of Hot-Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor

3. SUMMARY OF METHOD

- 3.1. This method is intended to provide a uniform process to verify that an SGC in question, herein referred to as, “candidate SGC” meets the operational requirements of T 312 and that the candidate SGC can provide comparable compaction results to the two models of SGC evaluated in the FHWA “pooled fund” purchase. In this standard, these two models are referred to as referee SGCs.
- 3.2. The candidate SGCs are required to be fabricated in accordance with the requirements of T 312.
- 3.3. The procedure relies on the comparison of volumetric properties of a given HMA mix compacted by a candidate and a referee SGC. This comparison of properties shall yield equivalent results.

4. SIGNIFICANCE AND USE

- 4.1. The SGC creates a cylindrical specimen from loose HMA through a gyratory (kneading) effort. The components that influence the level of compaction are angle of gyration, consolidation pressure, and speed of gyration. The SGC compaction procedure is described in T 312.
- 4.2. This procedure is especially useful for determining the suitability of new SGCs, which have no established track record.

5. RESPONSIBILITIES SPECIFIC TO THE STANDARD

- 5.1. A single operator, herein referred to as *operator*, shall be used throughout the evaluation.
- 5.2. The laboratories recommended for the evaluation of candidate SGCs are located in the Superpave Regional Centers (SRCs). There may be other equally qualified laboratories that are fit to perform the evaluation.
- 5.3. The SRC laboratories are identified in the following sections:
 - 5.3.1. *Northeast SRC*—Pennsylvania State University, State College, Pennsylvania;
 - 5.3.2. *Southeast SRC*—Auburn University, Auburn, Alabama;
 - 5.3.3. *North-Central SRC*—Purdue University, West Lafayette, Indiana;
 - 5.3.4. *South-Central SRC*—University of Texas, Austin, Texas; and
 - 5.3.5. *West Coast SRC*—University of Nevada-Reno, Nevada.
- 5.4. All costs for the evaluation of candidate SGCs shall be borne by the manufacturers. The cost schedule shall be established by each evaluation laboratory, and it may vary from one laboratory to the other. If an independent review of results or retesting is required by another laboratory or agency, the cost of that work shall also be borne by the manufacturer.
- 5.5. The evaluation is only valid for the model tested. If the manufacturer elects to modify the unit, a new evaluation is necessary. If these tests are performed on a prototype candidate compactor, they shall be repeated on an actual production model prior to use by agencies of that model.

6. PROCEDURE

- 6.1. Before proceeding with compaction, the operator shall perform, on all compactors included in the evaluation, the manufacturer's calibration procedures to ensure the angle of gyration, consolidation pressure, speed of gyration, and height measurement conforming to T 312 and the manufacturer's machine tolerances.
- 6.2. After each day's activities, verify the compactor calibration. If a parameter is found to be out of calibration, adjust the compactor to ensure the parameter is within the tolerable range. Report all calibration measurements (Section 7.1.4) including the date, out of tolerance values, and adjusted values.