
Standard Method of Test for

Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test

AASHTO Designation: T 87-86 (2004)



1. SCOPE

- 1.1. This method describes the dry preparation of soil and soil-aggregate samples, as received from the field, for mechanical analysis, physical tests, moisture–density relations test, and other tests as may be desired.
- 1.2. This practice provides qualitative information only; therefore, a precision statement is not applicable.
- 1.3. The values stated in SI units are to be regarded as the standard.

2. REFERENCED DOCUMENTS

- 2.1. *AASHTO Standards:*
 - M 92, Wire-Cloth Sieves for Testing Purposes
 - M 231, Weighing Devices Used in the Testing of Materials
 - T 88, Particle Size Analysis of Soils
 - T 89, Determining the Liquid Limit of Soils
 - T 90, Determining the Plastic Limit and Plasticity Index of Soils
 - T 92, Determining the Shrinkage Factors of Soils
 - T 99, Moisture–Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop
 - T 100, Specific Gravity of Soils
 - T 180, Moisture–Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop
 - T 248, Reducing Samples of Aggregate to Testing Size

3. APPARATUS

- 3.1. The balance shall conform to the requirements of M 231, for the class of general purpose balance required for the principal sample mass of the sample being tested.
- 3.2. *Drying Apparatus*—Any suitable device capable of drying samples at a temperature not exceeding 60°C (140°F).

- 3.3. *Sieves*—A series of sieves of the following sizes: 19.0 mm ($\frac{3}{4}$ in.), 4.75 mm (No. 4), 2.00 mm (No. 10), 0.425 mm (No. 40) and others as required for preparing the sample for a specific test. The sieves shall conform to M 92.
- Note 1**—A 50-mm (2-in.) sieve is required if the sample includes particles retained on the 19.0-mm ($\frac{3}{4}$ -in.) sieve and it is desired that the sample for moisture–density relations (T 99 or T 180) contain material between 19.0-mm ($\frac{3}{4}$ -in.) and 4.75-mm (No. 4) sieve size to represent the fraction between 50 and 19.0 mm (2 in. and $\frac{3}{4}$ in.).
- 3.4. *Pulverizing Apparatus*—Either a mortar and rubber-covered pestle or a mechanical device consisting of a power-driven, rubber-covered muller suitable for breaking up the aggregations of soil particles without reducing the size of the individual grains.
- Note 2**—Other types of apparatus, such as a revolving drum into which the soil sample and rubber-covered rollers are placed and tumbled until soil aggregations are pulverized, are satisfactory if the aggregations of soil particles are broken up without reducing the size of the individual grains.
- 3.5. *Sample Splitter*—A suitable riffle sampler or sample splitter for proportional splitting of the sample and capable of obtaining representative portions of the sample without appreciable loss of fines. The width of the container used to feed the riffle sample splitter should be equal to the total combined width of the riffle chutes. Proportional splitting of the sample on a canvas cloth is also permitted.
- Note 3**—The procedure for proportional splitting is described in T 248.

4. SAMPLE SIZE

- 4.1. The amounts of soil material required to perform the individual tests are as follows:

- 4.1.1. *Particle Size Analysis of Soils (T 88)*—For the particle size analysis material passing a 2.00-mm (No. 10) sieve is required in amounts equal to approximately 110 g for sandy soils and approximately 60 g of silty or clayey soils. A sufficient amount of material retained on either the 4.75-mm (No. 4) sieve or 2.00-mm (No. 10) sieve is required (Note 4) to obtain a representative gradation, and depending on the maximum particle size, shall not be less than the amount shown in the following table:

Diameter of Largest Particle, mm (in.)	Approximate Minimum Mass of Portion, kg
9.5 ($\frac{3}{8}$)	0.5
25 (1)	2.0
50 (2)	4.0
75 (3)	5.0

Note 4—The material for coarse sieve analysis may be separated by either of two alternate methods, Section 5.2.1 (2.00-mm sieve) or Section 5.2.2 (4.75-mm sieve). When only a small percentage of the material will be retained on the 4.75-mm or 2.00-mm sieve, a considerable total mass of sample will be required to provide the minimum quantity shown in the above table; consequently, adherence to the minimum mass requirements in the above table may not be necessary, if the material represented by the sample is not to be used in a base or subbase course, select borrow, or other item having a requirement for coarse aggregate.