
Standard Method of Test for

Determining the Percentage of Fracture in Coarse Aggregate

AASHTO Designation: TP 61-02 (2006)¹



1. SCOPE

- 1.1. This test method covers the determination of the percentage, by mass, of a coarse aggregate sample that consists of fractured particles meeting specified requirements.
- 1.2. *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*
- 1.3. The text of the standard reference notes provides explanatory material. These notes (excluding those in tables and figures) shall not be considered as requirements of 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 2, Sampling of Aggregates
 - T 11, Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
 - T 27, Sieve Analysis of Fine and Coarse Aggregates
 - T 248, Reducing Samples of Aggregate to Testing Size
 - T 255, Total Evaporable Moisture Content of Aggregate by Drying

3. SUMMARY OF TEST METHOD

- 3.1. A sample of aggregate is separated using the designated size of screen conforming to the specification controlling the determination of coarse and fine aggregate. The coarse aggregate particles are visually evaluated to determine their conformance to the defined fracture. The percentage of conforming particles, by mass, is determined for comparison to standard specifications.

4. APPARATUS

- 4.1. *Balance*—Meeting the requirements of M 231 for general-purpose balance required for the principle sample mass being tested.

- 4.2. *Sieves*—Meeting the requirements of M 92.
- 4.3. *Splitter*—Meeting the requirements of T 248.

5. TERMINOLOGY

- 5.1. *fractured face*—an angular, rough, or broken surface of an aggregate particle created by crushing, or by other means. A face is considered a “fractured face” whenever one-half or more of the projected area, when viewed normal to that face, is fractured with sharp and well-defined edges (this excludes small nicks).
- 5.2. *fractured particle*—a particle of aggregate having at least the minimum number of fractured faces specified (usually one or two).

6. SAMPLING

- 6.1. Sample the aggregate in accordance with T 2 and reduce the sample in accordance with T 248.

7. SAMPLE PREPARATION

- 7.1. Where the specifications list only a total fracture percentage, the sample shall be prepared in accordance with Method 1. When the specifications require that the fracture be counted and reported on each sieve, the sample shall be prepared in accordance with Method 2.
- 7.2. *Method 1—Combined Fracture Determination:*
- 7.2.1. Dry the sample sufficiently to obtain a clean separation of fine and coarse material in the sieving operation. Sieve the sample in accordance with T 27 over the 4.75-mm (No. 4) sieve, or the appropriate sieve listed in the agency specifications for this material.
- Note 1**—Where necessary, wash the sample over the sieve or sieves designated for the determination of fractured particles to remove any remaining fine material and dry the sample to a constant mass in accordance with T 255.
- 7.2.2. Reduce the sample using a splitter in accordance with T 248 to the appropriate size for test. This size of test sample should be slightly larger in mass than that shown in Table 1 to account for additional loss of fines after washing.

Table 1—Sample Size (Method 1, Combined Sieve Fracture)

Nominal Maximum Particle Size	Minimum Sample Mass Retained 4.75-mm (No. 4) Sieve
37.5 mm (1½ in.)	2500 g (6 lb)
25.0 mm (1 in.)	1500 g (3.5 lb)
19.0 mm (¾ in.)	1000 g (2.2 lb)
12.5 mm (½ in.)	700 g (1.5 lb)
9.5 mm (⅜ in.)	400 g (0.9 lb)
4.75 mm (No. 4)	200 g (0.5 lb)