

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MATERIALS CONTROL, SOILS AND TESTING DIVISION  
  
MATERIALS PROCEDURE

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STANDARD METHOD OF TEST FOR FRIABLE PARTICLES IN AGGREGATES

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1.0 PURPOSE

1.1 To set forth a rapid standard method of test for obtaining quantitative information concerning the approximate percent by weight of friable particles in aggregates. Although this test method is performed on a dry, prewashed sample, it is not intended to alter the intent of ASTM-C-142.

2.0 SCOPE

2.1 This method of test is applicable to all coarse and fine aggregates when a test for friable particles is required.

3.0 EQUIPMENT

3.1 Balances - The balance or scale used for determining the weight of the test samples shall be sensitive to 0.1 percent of the weight of the sample. The residue shall be weighed on a balance or scale sensitive to 0.02 percent of the weight of the original test sample.

3.2 Containers - Containers of a size and shape that will permit the spreading of the sample on the bottom in a thin layer.

3.3 Sieves - U.S. Standard Sieves 9.5 mm, 4.75 mm, 2.36 mm, 1.18 mm, and 850 mm.

4.0 DEFINITIONS

4.1 Friable Particle - Any piece of aggregate that can be broken into finely divided particles with the thumb and forefinger excluding the use of the fingernails.

5.0 TEST PROCEDURE

- 5.1 In order to provide a workable size for testing, it is necessary that the aggregate sample be washed, oven dried, and sieved.
- 5.1.1 Sieve a sufficient quantity of the coarse aggregate sample over a 9.50 mm and 4.75 mm sieve so as to yield a combined test portion of approximately 5000 grams.
- 5.1.1.2 Weigh and record the quantities retained on each sieve.
- 5.1.2 Sieve a sufficient quantity of the fine aggregate sample over a 1.18 mm sieve so as to yield a test portion of approximately 200 grams.
- 5.1.2.1 Weigh and record the weight of the material retained.
- 5.2 Spread the sieved sample in a thin layer on the bottom of a large flat pan.
- 5.3 Examine the sample for possible friable particles and squeeze or roll those suspect pieces between the thumb and forefinger attempting to break them into small particles.
- 5.4 After all discernible friable particles have been broken, remove the residue from the remainder of the sample by use of the sieves listed in the following table.

<u>Size of Particle Making up Sample</u>	<u>Size of Sieve for Sieving Residue of Friable Particles</u>
Fine Aggregate (Retained on 1.18 mm sieve)	850 mm
4.75 mm to 95.0 mm	2.36 mm
9.50 mm - over 38 mm	4.75 mm

6.0 CALCULATIONS

6.1 Percentages of friable particles are determined by the following formula:

$$P = \frac{C}{W} \times 100 \text{ where:}$$


P = Percentage of friable particles

W = Weight of the test sample retained on the first sieving.

C = Weight of the residue of friable particles removed after second sieving.

6.2 Report results to the nearest .01%.

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