GDT 22

A. Scope

For a complete list of GDTs, see the Table of Contents.

Use this test method to analyze mineral filler with sieves.

B. Apparatus

The apparatus consists of the following:

1. Balance: Use a 1.1 lb (500 g) capacity balance sensitive to 0.1 g.
2. Sieves: Use sieves that conform to the "Standard Specifications for Sieves for Testing Purposes," AASHTO M 92. The sieve sizes required are No. 30, No. 50, No. 100, No. 200, and No. 635 (600 µm, 300 µm, 150 µm, 75 µm and 20µ).
3. Oven: Use an oven capable of maintaining a temperature of 230 °, ± 9 °F (110 °, ± 5 °C).
4. Pan: Use a pie pan (WP-01) or equivalent.
5. Spinning Riffler or Microsplitter: Use a Spinning Riffler or a Microsplitter with a 1 to 2 L capacity or smaller.

C. Sample Size and Preparation

1. Quarter or use a sampler to take a representative sample from the material to be tested. Each test requires approximately 0.2 lb (100 g) of dry material.
2. Dry the sample to a constant weight at a temperature not exceeding 230 °F (110 °C).

D. Procedures

Mechanical sifting devices will suffice, but the results of the hand method are also acceptable.

If you use mechanical sifting devices, compare their effectiveness with the hand method.

1. Weigh about 10 g of the dried mineral filler to the nearest 0.l g.
2. Place the 10 g on a clean, dry No. 635 (20 µ) sieve.
3. Place the sieve and the mineral filler under a water faucet (or some other suitable means of washing).
4. Wash the sample until the water passing through the No. 635 (20 µ) sieve is clear and free of fines.
5. Transfer the portion of the sample retained on the No. 635 (20 µ) sieve to a pan or other suitable container.
6. Dry the sample to a constant weight.
7. Place the dried sample on the following sequence of sieves: No. 30, No. 50, No. 100, No. 200, and No. 635 (600 mm, 300 mm, 150 mm, and 20 µ).
    a. Hold the sieves in one hand in a slightly inclined position so that the sample will be well distributed over the sieve.
    b. Gently stroke the side of the sieve about 150 times per minute against the palm of the other hand on the up stroke.
    c. Every 25 strokes, turn the sieves about 1/6 of a revolution in the same direction.
    d. Continue sifting until less than 0.1 g passes through any one sieve in one minute of continuous sifting.

NOTE: Do not use washers, shot, or slugs on the sieves.

E. Calculations

1. Calculate the results for the percentage passing each sieve:

$$\% \text{ Passing} = \frac{(Wo - Ws) \times 100}{Wo}$$

where:

Wo = original dry weight of total sample

Ws = dry weight after sifting

2. The quantities obtained by the same operator in duplicate tests on portions of the same sample should not differ by more than one percent passing any one sieve.
3. The quantities obtained by different operators in different laboratories should not differ by more than two percent passing any one sieve.

F. Report

Report the following:

1. Results of the sieve analysis reported as the total percentage passing each sieve, expressed to the nearest one-half percent.
2. The method of sifting used.