FLORIDA DEPARTMENT OF TRANSPORTATION
State Materials Office
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FLORIDA METHOD OF TEST FOR DETERMINING PERCENT BY WEIGHT OF SCHIST, PHYLLITE OR SHALE IN COARSE AGGREGATE

Designation: FM 5-584

1. SCOPE

Use this test method to determine the percentage, by weight, of phyllite, schist or shale particles in coarse aggregates.
In this test, you manually separate phyllite, schist or shale particles by petrographic analysis and determine the percent by weight of those particles.

2. APPARATUS

2.1 Sample Splitter or Quartering Device.

2.2 Scales: Use gram scales with a minimum capacity of 2500 g (5.5 lbs) and accurate to ±0.1 g (± 0.00022 lbs).

2.3 Drying Device

2.4 Water Supply

2.5 Sieves: Use sieves that conform to the “Standard Specifications for Wire-Cloth Sieves for Testing Purposes,” AASHTO M 92.

2.6 Shaker: Use a Gilson or other approved device for mechanically agitating the sieves to separate the coarse material into portions of specific sized particles.

3. SAMPLE SIZE AND PREPARATION

3.1 The sampler shall use every precaution to obtain samples that will show the nature and conditions of the materials which they represent. Use coarse aggregate from material retained on the No. 4 (4.75 mm) sieve for the test.

3.1.1 If you cannot gather a representative gradation sample, you may use a known representative gradation of material sampled for the calculations.

Note: When the minus No. 4 (4.75 mm) and plus No. 8 (2.36 mm) portion exceeds 50% of the total plus No. 8 (2.36 mm) material, include the minus No. 4 (4.75 mm) and plus No. 8 (2.36 mm) portion in the test sample.

3.2 Test a sample size that will yield the amounts of the applicable sizes prescribed below.

Table 1 Minimum Size of Sample to be Tested (Square Opening Sieves)	
Sieve Size	**Sample Mass (grams)**
No. 8 - No. 4 (2.36 mm - 4.75 mm)	50
No. 4 - 3/8” (4.75 mm - 9.5 mm)	100
3/8” - 1/2” (9.5 mm - 13 mm)	200
1/2” - 3/4” (13 mm - 19 mm)	600
3/4” - 1” (19 mm - 25 mm)	1500
1" - 1-1/2” (25 mm - 37.5 mm)	4500
1-1/2” - 2” (37.5 mm - 50 mm)	12000

3.3 If the sample contains less than 5 percent of any of the sizes prescribed, do not test that size.

3.4 To calculate the test results, consider the sample to have the same percent schist, phyllite or shale as the next larger or next smaller size, whichever is present.

4. PROCEDURES

4.1 Obtain a representative portion (see Sample Size and Preparation, Section 3.2) of each particle size that represents 5 percent or more of the plus No. 4 (4.75 mm) portion.

4.2 Wash and dry the sample.

4.3 Depending on the sample’s grade (see the Note in Sample Size and Preparation), you may need to test the minus No. 4 (4.75 mm) and the plus No. 8 (2.36 mm) portion also.

4.4 Spread each aggregate portion on a large enough area or work table so you can carefully examine the individual particles.

4.4.1 By visual inspection, separate and classify the schist, phyllite or shale separately from the remainder of the sample.

4.4.2 Wet the material or use other suitable visual aids to help you separate the sample.

5. CALCULATIONS

5.1 Determine the dry total weight of particles of each size for each sample tested.

5.2 Determine the dry total weight of particles of each size for each sample classified as schist, phyllite or shale.

5.3 Calculate the percentage of each particle size for each sample classified as schist, phyllite or shale.

5.4 Determine the weighted average of schist or phyllite particles calculated from step 3 and based on the grading determined in Sample Size and Preparation.

5.5 In these calculations, the weighted average will be based on either the plus No. 8 (2.36 mm) or the plus No. 4 (4.75 mm) gradation, whichever is applicable under Sample Size and Preparation, step 1.

5.6 The calculation will be:

$$A = B \div C$$

where:

A = percent schist, phyllite or shale
B = dry weight of schist, phyllite or shale
C = total dry weight of sample

6. REPORT

6.1 The report includes the following:

6.1.1 Dry total weight of particles of each size for each sample tested

6.1.2 Dry total weight of particles of each size for each sample classified as schist, phyllite or shale

6.1.3 Percentage of each particle size for each sample classified as schist, phyllite or shale.

6.1.4 Weighted average of schist or phyllite particles from Procedures, step 3.

Note: If the sample represents the appropriate portion's grade, split or quarter the sample down to one composite sample of at least the size shown in Table 2. This is in lieu of testing each size separately as described above.

Table 2: Minimum Size of Sample (grams) to be Tested (Square Opening Sieve)							
	+ No. 8 (2.36 mm)	**+ No. 4 (4.75 mm)**	**+ 3/8" (9.5 mm)**	**+ 1/2" (13 mm)**	**+ 3/4" (19 mm)**	**+ 1" (25 mm)**	**+ 1-1/2" (37.5 mm)**
- No. 4 (4.75 mm)	50						
- 3/8" (9.5 mm)	150	100					
- 1/2" (13 mm)	350	300	200				
- 3/4" (19 mm)	950	900	800	600			
- 1" (25 mm)	2450	2400	2300	2100	1500		
- 1-1/2" (37.5 mm)	6950	6900	6800	6600	6000	4500	
- 2" (50 mm)	18950	18900	18800	18600	18000	16500	12000