Standard Method of Test for

Sieve Analysis of Fine and Coarse Aggregates

SCDOT Designation: SC-T-4 (9/16)

1. SCOPE

1.1. This method of test covers a field procedure for the determination of particle size distribution of fine and coarse aggregates, using sieves with square openings.

1.2. This standard may involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. REFERENCED DOCUMENT

2.1. SC-T-3.

3. SUMMARY OF TEST METHOD

3.1. A sample of aggregate is sieved to determine the gradation.

4. SIGNIFICANCE AND USE

4.1. The gradation of fine and coarse aggregate samples must be tested to determine compliance with the specifications for these materials.

5. APPARATUS

5.1. Sieves in a series of sizes to determine compliance with the specifications for the material in question, balance or electronic scales.

6. TEST SPECIMENS

6.1. Samples that are too large for testing should be reduced to the proper size by SC-T-3.

6.2. Samples for sieve analysis shall be dried to a saturated, surface dry condition prior to testing. Drying may be in air or by use of a method such that the temperature of the sample does not exceed 140°F.

6.2.1. Samples of fine aggregate for sieve analysis shall weigh, after drying, a minimum of 500 grams.

6.2.2. In no case, however, shall the fraction retained on any sieve at the completion of the sieving operation weigh more than 4 grams per square inch of sieving surface. This amounts to 200 grams for the usual 8-inch diameter sieve.

6.2.3. Samples of coarse aggregate for sieve analysis shall weigh, after drying, not less than the amount shown in Figure SC-T-4A.

TYPE OF AGGREGATE	MINIMUM DRY WEIGHT OF TEST SAMPLE	
	(pounds)	(kilograms)
Clean Stone (5, 57, 67, etc.)	20	9
Aggregate Base (macadam, mlbc, rpcc)	35	16

TABLE OF MINIMUM DRY SAMPLE WEIGHTS
Figure SC-T-4A

7. PROCEDURE

7.1. Separate into a series of sizes using such sieves as necessary to determine compliance with the specifications for the material under test.

7.2. Conduct sieving operations by means of lateral and vertical motion of the sieve, accompanied by jarring action so as to keep the sample moving continuously over the surface of the sieve. The motion of the sieve may be accomplished by mechanical shaker or by hand. Do not turn or manipulate fragments through the sieve by hand.

1.1. Continue the sieving operation until not more than 0.5 percent by weight of the total sample passes any sieve during one (1) minute of hand sieving.

1.2. Weigh the sieved material and record the weights. The total weight after sieving must check within 0.3 percent of the original dry sample weight.

8. CALCULATIONS

8.1. A sample calculation to determine the results of the sieving operations follows with the results reported in Figure SC-T-4B:

8.2. Total Weight of Sample = 17,327 grams

Passing 1½-inch Sieve = $\left(\frac{17{,}327}{17{,}327}\right)$ x 100 = 100%

Passing 1-inch Sieve = $\left(\frac{15{,}876}{17{,}327}\right)$ x 100 = 92%

Passing ½-inch Sieve = $\left(\frac{8{,}210}{17{,}327}\right)$ x 100 = 47%

Passing No. 4 Sieve = $\left(\frac{1{,}678}{17{,}327}\right)$ x 100 = 10%

Passing No. 8 Sieve = $\left(\frac{454}{17{,}327}\right)$ x 100 = 3%

SIEVE DESIGNATION	WEIGHT PASSING (grams)	PERCENT PASSING (%)
1½-inch	17,327	100
1-inch	15,876	92
½-inch	8210	47
No. 4	1678	10
No. 8	454	3

SIEVING OPERATIONS RESULTS
Figure SC-T-4B

9. REPORT

9.1. Report the percentage of material passing each sieve to the nearest whole percent, except the No. 200 sieve shall be reported to the nearest 0.1 percent.