Method of Test for Percentage of Particles of Less Than 1.95 Specific Gravity in Fine Aggregates

1. Scope:

This test is for determining the percentage of lightweight particles in fine aggregate.

2. Apparatus:

2.1 Scale or balance having the capacity to weigh any sample which may be tested utilizing this procedure and readable to the nearest 0.1 gram.

2.2 Sieves. A #30 sieve conforming to the requirements of AASHTO M 92.

2.3 Strainer. A piece of #30 sieve cloth, conforming to M 92, of suitable size and shape for separating the floating pieces from the heavy liquid.

2.4 Beakers and graduate. Two 1000 mL glass beakers and one glass graduate of at least 250 mL capacity.

2.5 Containers suitable for drying the aggregate sample.

2.6 Hydrometer for measuring the specific gravity of the liquid, readable to 0.01.

2.7 Zinc chloride solution having a specific gravity of 1.95 ± 0.01.

2.8 Drying oven capable of maintaining a temperature of $230° \pm 9°F$.

3. Procedure:

3.1 Using the graduate and hydrometer, check the specific gravity of the zinc chloride solution and record on the worksheet to the nearest 0.01.

3.2 Obtain a 250 to 350 g sample in accordance with SD 201 and dry in an oven at $230° \pm 9°F$ to a constant weight as per SD 108. Weigh the material to the nearest 0.1 gram.

NOTE: Previously washed material may not be used for this test.

3.3 Screen the material on a #30 sieve and save the retained portion for the test.

3.4 Place approximately 600 mL of the solution in a glass beaker. The material is poured into the solution and at the same time stir the solution with a spoon. Continue stirring to insure that all of the material is in suspension. Allow the material to settle until there is a defined cleavage plane between the rising and settling material.

3.5 Decant the solution over the strainer into a glass beaker. Continue decanting until the settled material appears near the lip of the beaker.

3.6 Pour the solution back into the settled material at the same time stirring with a spoon to bring all material into suspension. Decant the solution as described in paragraph 3.5.

3.7 Thoroughly wash the material retained on the strainer to remove all zinc chloride. Dry the material to a constant weight in an oven at 230° ± 9°F. Weigh the material to the nearest 0.1 gram.

4. Report:

4.1 The approximate percentage of lightweight particles is calculated in the following manner:

$$\% \text{ lightweight particles} = \frac{\text{wt. of decanted particles}}{\text{wt. of original dry sample}} \times 100$$

4.2 Report the percentage of lightweight particles to the nearest 0.1%.

5. References:

AASHTO M 92
SD 108
SD 201
DOT-3
DOT-69