





**TABLE 1 Grading Requirements**

Sieve Size	Percentage Retained on Each Sieve, Cumulative					
	Perlite, by volume		Vermiculite, by volume		Sand, by weight	
	Max	Min	Max	Min	Max	Min
No. 4 (4.75-mm)	0	...	0	...	0	...
No. 8 (2.36-mm)	5	0	10	0	5	0
No. 16 (1.18-mm)	60	5	75	40	30	5
No. 30 (600-μm)	95	45	95	65	65	30
No. 50 (300-μm)	98	75	98	75	95	65
No. 100 (150-μm)	100	85	100	90	100	90
No. 200 (75-μm)					100	95

sieves shown in **Table 1**, nor more than 25 % between the No. 50 (300 μm) and No. 100 (150 μm) sieves.

## 5.2 Density:

5.2.1 Perlite shall have a density of not less than 6 nor more than 12 lb/ft<sup>3</sup> (96 to 192 kg/m<sup>3</sup>) when tested in accordance with Test Method **C29/C29M** using the shoveling procedure.

5.2.2 Vermiculite shall have a density of not less than 6 nor more than 10 lb/ft<sup>3</sup> (96 to 160 kg/m<sup>3</sup>) when tested in accordance with Test Method **C29/C29M** using the shoveling procedure.

## 6. Sampling

6.1 *Apparatus*—Suitable thief tube.

6.2 *Bulk Aggregate*—Obtain specimens of sand in accordance with Practice **D75/D75M**.

6.3 *Bagged Aggregate*—Obtain from 1 bag randomly selected from each 100 bags but not less than 6 bags from the shipment. For smaller shipments, not less than 6 % of the number of bags shall constitute the sample.

6.3.1 Secure specimens by inserting a suitable thief tube the full distance between diagonally opposite corners of the bag with the bag lying in a horizontal position. Combine the portions to produce a composite specimen having a volume not less than 1 ft<sup>3</sup> (0.028 m<sup>3</sup>). Prepare and test not less than 1 composite specimen separately for each 2000 bags of aggregate.

6.4 Reduce specimens obtained in accordance with **6.2** or **6.3** by quartering or riffing to obtain specimens of proper size for individual tests.

## 7. Test Methods

### 7.1 Apparatus:

7.1.1 *Sieve*—Specification **E11**, Nos. 4, 8, 16, 30, 50, 100, 200 (4.75, 2.36, 1.18 mm, 600 μm, 300 μm, 150 μm, 75 μm).

7.1.2 *Graduated 250 mL Cylinder*.

7.1.3 *250 mL Beaker*.

7.1.4 *Tared Evaporating Dish*.

7.1.5 *Fast Paper Filter*.

7.1.6 *100 mL Volumetric Flask*.

7.1.7 *Deionized Water*.

7.1.8 *Spatula*.

7.1.9 *Weighing Scale*.

7.1.10 *Oven*.

7.1.11 *Desiccator*.

7.1.12 *Mechanical Shaker*.

7.1.13 *500 mL Graduated Cylinder*.

7.2 *Sieve Analysis for Sand*—Use Test Method **C136/C136M**.

7.3 *Sieve Analysis for Perlite or Vermiculite*—Use Test Method **C136/C136M** except as modified as follows:

7.3.1 Use a specimen of 500 mL bulk volume.

7.3.1.1 Measure the volume of each sieve fraction in a 250 mL graduated cylinder. Pour the specimen loosely into the graduate without tamping or shaking. Level the surface with a spatula and read the volume to within ±2 mL.

7.3.2 Express the volumes of the individual sieve fractions as percentages of the sum of the volumes of all fractions.

7.3.3 Calculate the cumulative percentages on each designated sieve by summing the individual percentages of all fractions larger than that sieve.

7.4 *Density of Lightweight Aggregate*—Test Method **C29/C29M**; use shoveling procedure.

### 7.5 Water Soluble Impurities of Sand:

7.5.1 *Significance and Use*—Impurities can affect the setting properties, strength, and bond performance of gypsum plaster. These procedures determine the water soluble impurities of the sand being evaluated.

#### 7.5.2 Apparatus:

7.5.2.1 *Analytical Balance*, with a precision of 0.0001 g.

7.5.2.2 *Balance*, capable of weighing at least 10 g to a precision of 0.1 g.

7.5.2.3 *Desiccator*, containing calcium chloride or equivalent desiccant.

7.5.2.4 *Drying Oven*, capable of being controlled to 250 °F (121 °C).

7.5.2.5 *Filter Paper*—A “fast” filter paper shall be used.<sup>3</sup>

7.5.2.6 *Atomic Absorption or Ion Chromatography Equipment*.

7.5.2.7 *Mechanical Shaker*.

#### 7.5.3 Procedure (Water Soluble Impurities):

7.5.3.1 Weigh approximately 10 g of air-dried sand and record the weight to 0.1 g. Transfer to a 250-mL beaker. Add 100 mL of distilled water. Heat to boiling and allow to simmer on a hot plate for 5 min. Filter through a fast paper into a tared evaporating dish. Wash with hot distilled water until the volume of filtrate is about 125 mL. Evaporate to dryness in an oven without allowing the temperature of the dish to rise above 250 °F (121 °C). Cool residue in a desiccator, weigh to 0.001 g and calculate the percentage of residue on the initial weight of sand.

7.5.3.2 *Report*—Report percentage as water soluble impurities.

7.5.3.3 *Precision and Bias*—No estimate of the precision or bias, or both, is available at this time.

#### 7.5.4 Procedure (Sodium Ion Content):

7.5.4.1 Weigh approximately 5 g of sand and record the weight to 0.01 g. Transfer to 100-mL volumetric flask. Add

<sup>3</sup> The sole source of supply of the apparatus known to the committee at this time is VWR Scientific. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,<sup>1</sup> which you may attend.



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