

GDT 5

A. Scope

This test covers the procedure for determining if sand to be used in sand-cement rip-rap will favorably react with Portland cement.

B. Apparatus

1. Large spoon (WS-14) and bowl (WB-12). However, an ordinary 4 qt (3.785 L) sauce pan, 9 1/2 in (241.3 mm) in diameter at the top and 4 1/2 in (114.3 mm) in height, and a large kitchen spoon are satisfactory.
2. Same equipment as used in these AASHTO Designation paragraphs: T106, 2.1, 2.2, 2.4, 2.5, 2.8, 2.9, 2.10.

C. Sample Size and Preparation

1. Proportions

Sand	2.2 lb (1000 g)
Cement	0.44 lb(200 g)
Water	12 x percent optimum moisture, in grams (optimum moisture determined according to GDT 67 or GDT 7)

2. Mixing—Thoroughly mix sand and cement in bowl. Add water and mix until the material and the moisture are uniformly mixed together.
3. Molding—Mold the specimens using the following procedure:
 - a. Start molding the specimens within a total elapsed time of not more than 150 seconds after completion of the original mixing of the mortar batch.
 - b. Place a 1 in (25 mm) layer of mortar (approximately one-half of the depth of the mold) in all of the cube compartments.
 - c. Tamp the mortar in each cube compartment (2.8) 32 times in about 10 seconds in 4 rounds, each round to be at right angles to the other and consisting of 8 adjoining strokes over the surface of the specimen. Make the tamping pressure just sufficient to ensure that the molds are uniformly filled.
 - d. Complete the four rounds of tamping (32 strokes) of the mortar in one cube before going to the next. After tamping the first layer in all of the cube compartments, fill the compartments with the remaining mortar and then tamp as specified for the first layer.
 - e. While tamping the second layer, bring in the mortar forced out onto the tops of the molds.
 - f. Before starting the next round of tamping, use gloved fingers and the tamper to ring the mortar forced out after each round.
 - g. Tamp the tops of all cubes. They should extend slightly above the tops of the molds. Bring in the mortar that has been forced out onto the tops of the molds with a trowel. Smooth off the cubes by drawing the flat side of the trowel (with the leading edge slightly raised) once across the top of each cube at right angles to the length of the mold.
 - h. Level the mortar and make the mortar that protrudes above the top of the mold more uniformly thick by drawing the flat side of the trowel (with the leading edge slightly raised) lightly once along the length of the mold.
 - i. Cut off the mortar to a plane surface flush with the top of the mold by drawing the straight edge of the trowel (held nearly perpendicular to the mold) with a sawing motion over the length of the mold.

D. Procedures

1. Place in moisture cabinet having 90% + humidity and temperature 23 ± 1.7 °C. Allow to remain 24 hours.
2. Remove from the mold and return the specimen to the moisture cabinet for remainder of 7 days.
3. Test the specimen using the method in AASHTO Designation: T-106, Paragraph 7.6.3.

E. Calculations

The average compressive strength of three specimens shall be 500 psi (3447 kPa) or greater.

F. Report

Report psi (kPa) average and psi (kPa) each individual cube.