

(INACTIVE)
OHD L-19
METHOD OF TEST FOR
MEASURING MORTAR-MAKING PROPERTIES OF FINE AGGREGATE

- I. **SCOPE.** This method of test covers the procedure for measuring the mortar making properties of fine aggregate for concrete by means of a compression test of specimens made from a mortar of plastic consistency and gauged to a definite water cement ratio.
- II. **BASIS OF COMPARISON.** The fine aggregate under test shall be compared, in mortar as described in this test method, with graded standard sand having a fineness modulus of 2.40 ± 0.10 unless otherwise specified. The graded standard sand shall consist of approximately equal parts by weight of standard Ottawa sand as prescribed in AASHTO T 132, and graded Ottawa sand as specified in AASHTO T 106.
- III. **MORTAR.** Cement and water (Section VI) in quantities (Note) that will give a water-cement ratio of 0.6 by weight shall be placed in an appropriate, non-absorbent vessel and the cement allowed to absorb water for 1 minute. The materials shall then be mixed with a spoon into a smooth paste. A sample of sand of known weight that has been placed in a saturated surface-dry condition, by the procedure specified in AASHTO T 84, shall be beaten into the mixture until the material appears to be of the desired consistency (flow 100 ± 5). The mixing shall continue for thirty (30) seconds and a flow determination in accordance with Section IV.
- IV. **FLOW TEST.**
 - A. **Apparatus.**
 1. **Flow Table, Flow Mold, and Caliber:** Conforming to the requirements of AASHTO M 152.
 2. **Tamper and Trowel:** Conforming to the requirements of AASHTO T 106.
 - B. **Procedure.** The flow table shall be wiped clean and dry and the flow mold placed in the center. Immediately after completing the mixing operation, a layer of mortar about one (1) inch (2.5 cm) in thickness shall be placed in the mold and tamped 20 times with the tamper, using just enough pressure to ensure uniform filling of the mold. The mold shall then be filled with mortar and tamped as specified for the first layer. The mortar shall then be struck off, flush with the top of the mold, with the straight edge of the trowel. The top of the table shall be wiped clean and dry, being careful to remove any water from around the edge of the flow mold. The mold shall be lifted away from the mortar one (1) minute after completing the mixing operation. Immediately, the table shall be dropped through a height of $\frac{1}{2}$ inch (13 mm) ten (10) times in six (6) seconds. The flow is the resulting increase in average diameter of the mortar mass, measured on at least 4 diameters at equally spaced intervals, expressed as a percentage of the original diameter. Should the flow be too great, the mortar may be returned to the mixing vessel, additional sand added, and a new flow determination made. If more than 2 trials must be made to obtain a flow of 100 ± 5 , the mortar shall be discarded and test specimens made from a new batch. If the mortar is too dry, the batch shall be discarded. The quantity of sand used shall be determined by subtracting the weight of the portion remaining from the weight of the initial sample.

- V. **MOLDING SPECIMENS.** Immediately following the flow determination, the mortar shall be placed in 2 inch cubical molds, meeting the requirements of AASHTO T-106, in two layers. Each layer shall be rodded in place with 25 strokes of a $\frac{3}{8}$ inch (9.5 mm) diameter metal rod having a rounded end.

After rodding, the mold shall be filled to overflowing. The specimens shall be placed in a moist closet for curing. Three to four (3-4) hours after molding, the specimens shall be struck off to a smooth surface. Twenty to twenty-four (20-24) hours after molding, the specimens shall be removed from the molds and stored in water until tested.

- VI. **TEMPERATURE.** The temperature of the mixing water, moist closet, and storage tank shall be maintained at $73.4^{\circ} \pm 3^{\circ}$ F ($23^{\circ} \pm 1.7^{\circ}$ C).

VII. **TESTING SPECIMENS.**

- A. Testing of the specimens shall be carried out immediately after their removal from the moist closet for 24 hour specimens and from storage water for all other specimens. If more than one 24 hour specimen is removed for test, they shall be covered with a damp cloth until time of testing. If more than one specimen is removed from the storage water for testing, they shall be immersed in a pan of storage water.
- B. Each specimen shall be wiped to a surface dry condition, and any loose sand grains or incrustations shall be removed from the contact faces. These faces shall be checked with a straight-edge and if appreciable curvature is present, the specimen shall be discarded or the faces ground to a plane surface.
- C. The load shall be applied to specimen faces that were in contact with the true plane surfaces of the mold. The specimen shall be placed in the center of the bearing blocks. No cushioning or bedding material shall be used. If a specimen is expected to have a maximum load of 3,000 pounds (1361 Kg) or more, $\frac{1}{2}$ of the maximum load may be applied at any convenient rate. Then the rate shall be adjusted so that the maximum load will be reached in not less than 20 or more than 80 seconds. The specimen shall be tested to failure without interruption or adjustment of the loading rate.