

CRD-C 406-79

TEST METHOD FOR COMPRESSIVE STRENGTH OF MORTAR FOR USE IN EVALUATING WATER FOR MIXING CONCRETE

1. Scope

1.1 This test method outlines the procedure for evaluating the effect of the quality of mixing water on the compressive strength of mortar. Its principal use is to evaluate the quality of water, proposed for use in mixing concrete, that other tests have indicated to be questionable.

2. Basis of Comparison

2.1 The water under test shall be compared with distilled water in otherwise identical mortar, as described in this method.

3. Materials

3.1 Sand.-

3.1.1 The sand used for making the test specimens shall be graded standard sand consisting of a mixture of approximately equal parts by weight of standard Ottawa sand and graded Ottawa sand conforming to the requirements of CRD-C 156. The graded standard sand shall be prepared from sieve fractions of the two types of Ottawa sand, so as to have a fineness modulus of 2.40 by the use of the amounts of sieve fractions shown below.

Size Range	Percent
No. 8 to No. 16	0
No. 16 to No. 30	54
No. 30 to No. 50	32
No. 50 to No. 100	14
Passing No. 100	0

3.1.2 No tolerances are given for the grading of the sands to be used in this test. It is intended that the sands used will be separated into their individual sieve fractions by a sieving procedure that produces a comparable degree of cleanness of size separation to that contemplated by the provisions of CRD-C 103 and that weighed amounts of these sieve fractions corresponding to the specified percentages will

be selected for combining as directed.

3.2 Cement.- The cement used in making the test specimens shall be the portland cement to be used with the mixing water under test. Project cement shall be used if available; if such cement is not available, other cement of the same type and preferably from the same source may be used. If it is necessary in order to expedite the tests, laboratory type III cement may be used and the tests made at 3 and 7 days age.

3.3 Mixing Water.- Distilled water shall be used in making one-half of the test specimens, and water representative of the source being investigated shall be used in making the remaining half of the specimens.

4. Mortar

4.1 Each batch of mortar shall contain 600 g of cement, 360 g of water, and 2100 g of graded standard sand. The mortar shall be mixed in accordance with the requirements for mechanical mixing given in CRD-C 210.

5. Molding Specimens

5.1 The test specimens shall be 2-in. cubes molded in accordance with applicable portions of CRD-C 227.

6. Number of Specimens

6.1 Three specimens made with distilled water and three specimens made with the water under investigation shall be tested at ages of 7 and 28 days.

7. Temperature

7.1 The temperature of the mixing water, moist closet, and storage tank shall be as specified in CRD-C 227.

8. Testing Specimens

8.1 Specimens shall be tested for compressive strength in accordance with the provisions of CRD-C 227.

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9. Evaluation

9.1 The total maximum load indicated by the testing machine shall be recorded and the compressive strength calculated in pounds per square inch. The results of tests on specimens

containing the water being evaluated shall be expressed as a percentage of the results obtained on specimens containing distilled water. If the average result so expressed is less than 90 percent, the water should not be used for mixing concrete.