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Highway and Transportation Officials Standard
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Standard Test Method for Surface Moisture in Fine Aggregate[1]

This standard is issued under the fixed designation C70; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers field determination of the amount of surface moisture in fine aggregate by displacement in water.

1.2 The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C128 Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

C566 Test Method for Total Evaporable Moisture Content of Aggregate by Drying

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

3. Significance and Use

3.1 This test method is not widely used. However, it is a convenient procedure for field or plant determination of moisture content of fine aggregate if specific gravity values are known and if drying facilities are not available. It can be used to adjust the aggregate mass for moisture content and to determine surface moisture contribution to mixing water in portland cement concrete.

3.2 The accuracy of the test method depends upon accurate information on the bulk specific gravity of the material in a saturated surface-dry condition.

4. Apparatus

4.1 *Balance,* having a capacity of 2 kg or more and sensitive to 0.5 g or less.

4.2 *Flask*—A suitable container or flask, preferably of glass or noncorrosive metal. The container may be a pycnometer, a volumetric flask, a graduated volumetric flask, or other suitable measuring device. The volume of the container shall be from two to three times the loose volume of the sample. The container shall be so designed that it can be filled to the mark, or the volume of its contents read, within 0.5 mL or less.

5. Sample

5.1 Select a representative sample of the fine aggregate to be tested for surface moisture content. It shall weigh not less than 200 g. Larger samples will yield more accurate results.

6. Procedure

6.1 The surface water content may be determined either by mass or volume. In each case the test shall be made at a temperature range of 18 to 29°C.

6.2 *Determination by Mass*—Determine the mass of the container, in grams, filled to the mark with only water. Before placing the sample into the container, adjust the level of the water so that it will be sufficient to cover the sample without going over the original mark. Introduce the weighed sample of fine aggregate into the container and remove the entrapped air. Fill the container to the original mark, and determine the mass in grams. Calculate the amount of water displaced by the sample, as follows:

$$M_d = M_c + M_s - M \quad (1)$$

where:

M_d = mass of water displaced by the sample, g,
M_c = mass of container filled to the mark with water, g,
M_s = mass of sample, g, and
M = mass of container and sample, filled to the mark with water, g.

[1] This test method is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregatesand is the direct responsibility of Subcommittee C09.20 on Normal Weight Aggregates.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.