Designation: ~~C566 – 97 (Reapproved 2004)~~ C566 – 13

Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying[1]

This standard is issued under the fixed designation C566; 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 Department of Defense.

1. Scope

1.1 This test method covers the determination of the percentage of evaporable moisture in a sample of aggregate by drying both surface moisture and moisture in the pores of the aggregate. Some aggregate may contain water that is chemically combined with the minerals in the aggregate. Such water is not evaporable and is not included in the percentage determined by this test method.

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

NOTE 1—Sieve size is identified by its standard designation in Specification E11. The alternative designation given in parentheses is for information only and does not represent a different standard sieve size.~~provided for information only.~~

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.* For specific precautionary statements, see 5.3.1, 7.2.1, and 7.3.1.

2. Referenced Documents

2.1 *ASTM Standards:*[2]
C29/C29M Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
C125 Terminology Relating to Concrete and Concrete Aggregates
C127 Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
C128 Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
D75 Practice for Sampling Aggregates
E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

2.2 *Other Document:*
National Research Council Report SHRP-P-619[3]

3. Terminology

3.1 *Definitions:*
3.1.1 For definitions of terms used in this test method, refer to Terminology C125.

4. Significance and Use

4.1 This test method is sufficiently accurate for usual purposes, such as adjusting batch quantities of ingredients for concrete. It will generally measure the moisture in the test sample more reliably than the sample can be made to represent the aggregate supply. In cases where the aggregate itself is altered by heat, or where more refined measurement is required, the test should be conducted using a ventilated, controlled temperature oven.

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[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.

[3] Available from the National Research Council, 2101 Constitution Ave., N.W., Washington, DC 20418.

4.2 Large particles of coarse aggregate, especially those larger than 50 ~~mm (2 in.),~~ mm, will require greater time for the moisture to travel from the interior of the particle to the surface. The user of this test method should determine by trial if rapid drying methods provide sufficient accuracy for the intended use when drying large size particles.

5. Apparatus

5.1 *Balance*—A balance or scale accurate, readable, and sensitive to within 0.1 % of the test load at any point within the range of use. Within any interval equal to 10 % of the capacity of the balance or scale used to determine mass, the load indication shall be accurate within 0.1 % of the difference in masses.

5.2 *Source of Heat*—A ventilated oven capable of maintaining the temperature surrounding the sample at 110 ± ~~5°C (230 ± 9°F).~~ 5°C. Where close control of the temperature is not required (see 4.1), other suitable sources of heat may be used, such as an electric or gas hot plate, electric heat lamps, or a ventilated microwave oven.

5.3 *Sample Container*—A container not affected by the heat, of sufficient volume to contain the sample without danger of spilling, and of such shape that the depth of sample will not exceed one fifth of the least lateral dimension.

5.3.1 **Precaution**—When a microwave oven is used, the container shall be nonmetallic.

NOTE 2—Except for testing large samples, an ordinary frying pan is suitable for use with a hot plate, or any shallow flat-bottomed metal pan is suitable with heat lamps or oven. Note the precaution in 5.3.1.

5.4 *Stirrer*—A metal spoon or spatula of convenient size.

6. Sampling

6.1 Sample in accordance with Practice D75, except for the sample size.

6.2 Secure a sample of the aggregate representative of the moisture content in the supply being tested and having a mass not less than the amount listed in Table 1. Protect the sample against loss of moisture prior to determining the mass.

7. Procedure

7.1 Determine the mass of the sample to the nearest 0.1 %.

TABLE 1 Sample Size for Aggregate

~~Nominal Maximum Size of Aggregate, mm (in.)[A]~~	~~Mass of Normal Weight Aggregate Sample, min, kg[B]~~
~~4.75 (0.187) (No. 4)~~	~~0.5~~
~~9.5 (⅜)~~	~~1.5~~
~~12.5 (½)~~	~~2~~
~~19.0 (¾)~~	~~3~~
~~25.0 (1)~~	~~4~~
~~37.5 (1½)~~	~~6~~
~~50 (2)~~	~~8~~
~~63 (2½)~~	~~10~~
~~75 (3)~~	~~13~~
~~90 (3½)~~	~~16~~
~~100 (4)~~	~~25~~
~~150 (6)~~	~~50~~

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63 (2½)	10
75 (3)	13
90 (3½)	16
100 (4)	25
150 (6)	50

[A] Based on sieves meeting Specification E11.
[B] Determine the minimum sample mass for lightweight aggregate by multiplying the value listed by the dry-loose unit mass of the aggregate in kg/m^3 (determined using Test Method C29/C29M) and dividing by 1600.