



Designation: C 265 – 03a

Standard Test Method for Water-Extractable Sulfate in Hydrated Hydraulic Cement Mortar¹

This standard is issued under the fixed designation C 265; 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.

1. Scope

1.1 This test method covers the measurement of water-extractable SO_3 in hardened hydraulic cement mortar. This measurement is assumed to represent unreacted, available sulfate remaining in the mortar.

1.1.1 (**Warning**—Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.)

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 Values in SI units were obtained by measurement in SI units or by appropriate conversion using the Rules for Conversion and Rounding given in **IEEE/ASTM SI-10 Standard** of measurements made in other units.

1.4 *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:

- C 109/C 109M** Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)²
- C 114** Test Methods for Chemical Analysis of Hydraulic Cement²
- C 150** Specification for Portland Cement²
- C 219** Terminology Relating to Hydraulic Cement²
- C 305** Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency²
- C 595** Specification for Blended Hydraulic Cements²
- C 778** Specification for Standard Sand²
- C 1157** Performance Specification for Hydraulic Cement²

¹ This test method is under the jurisdiction of ASTM Committee C01 on Cement and is the direct responsibility of Subcommittee C01.28 on Sulfate Content.

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² *Annual Book of ASTM Standards*, Vol 04.01.

D 1193 Specification for Reagent Water³

E 11 Specification for Wire-Cloth and Sieves for Testing Purposes⁴

IEEE/ASTM SI-10 Standard for Use of the International System of Units (SI): The Modern Metric System⁴

3. Terminology

3.1 *Definitions*—The terms used in this test method are defined in accordance with Terminology **C 219**.

4. Significance and Use

4.1 Excess soluble sulfate ions in hardened cement can result in reduced durability. This test method is intended to show whether calcium sulfate has been used in cement in such amount to leave excess soluble sulfate in hardened mortar. The test method is used to establish compliance in Specification **C 595** for those cements in which optimized SO_3 exceeds the table limit. This test method also can provide useful information on other hydraulic cements, such as those specified in Specifications **C 150** and **C 1157**.

5. Apparatus

5.1 *Sieve*—A 2.36-mm (No.8) sieve conforming to Specification **E 11**.

5.2 *Mixer, Bowl, and Paddle*—An electrically driven mechanical mixer equipped with a paddle and bowl, as specified in the Apparatus section of Practice **C 305**.

5.3 *Polyethylene Containers*—Watertight polyethylene bags of 1-L (1-qt) capacity or approximately 360-mm (14-in.) sheet material, made using polyethylene at least 0.10-mm (0.004-in.) in thickness.

5.4 *Mortar and Pestle*—A mortar of 1.5-L (1½-qt) size, and a pestle, both of which shall be iron or porcelain.

5.5 *Water Bath*—A water bath thermostatically controlled at $23.0 \pm 0.15^\circ\text{C}$.

6. Reagents and Materials

6.1 *Mixing Water*—Reagent water conforming to the numerical limits of Type II of Specification **D 1193**.

³ *Annual Book of ASTM Standards*, Vol 11.01.

⁴ *Annual Book of ASTM Standards*, Vol 14.04.