



Standard Test Method for Cement Content of Hardened Soil-Cement Mixtures¹

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1. Scope *

1.1 This test method covers the determination by chemical analysis of cement content of hardened soil-cement mixtures.

1.2 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D 6026.

1.3 The values stated in SI units are to be regarded as the standard.

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.* For specific hazard precautions, see Section 6.

2. Referenced Documents

2.1 ASTM Standards:

C 125 Terminology Relating to Concrete and Concrete Aggregates²

C 219 Terminology Relating to Hydraulic Cement²

D 653 Terminology Relating to Soil, Rock, and Contained Fluids³

D 2901 Test Method for Cement Content of Freshly Mixed Soil-Cement³

D 3740 Practice for the Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock Used in Engineering Design and Construction³

D 4753 Specification for Evaluating, Selecting, and Specifying Balances and Scales for Use in Soil, Rock, and Construction Materials Testing³

D 5982 Test Method for Determining Cement Content of Fresh Soil-Cement (Heat of Neutralization Method)⁴

D 6026 Practice for Using Significant Digits in Calculating and Reporting Geotechnical Test Data⁴

E 11 Specification for Wire-Cloth Sieves for Testing Purposes²

E 145 Specifications for Gravity-Convection and Forced-Ventilation Ovens²

¹ This test method is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.15 on Stabilization with Admixtures.

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² Annual Book of ASTM Standards, Vol 14.02.

³ Annual Book of ASTM Standards, Vol 04.08.

⁴ Annual Book of ASTM Standards, Vol 04.09.

E 832 Specification for Laboratory Filter Papers²

3. Terminology

3.1 Definitions:

3.1.1 Refer to Terminology D 653 for definitions of terms relating to soil.

3.1.2 Refer to Terminologies C 125 and C 219 for definitions of terms relating to cement.

4. Significance and Use

4.1 This test method determines cement content in mixtures of cement with soil or aggregate by chemical analysis. It was developed primarily for testing samples for which a significant degree of cement hydration or hardening has taken place. Test Methods D 2901 or D 5982 may be used for determining cement content of freshly mixed soil-cement mixtures.

4.2 This test method is based on determination by chemical analysis of the calcium oxide (CaO) content of the sample. The method may not be applicable to soil-cement materials containing soils or aggregates which yield significant amounts of dissolved calcium oxide (CaO) under the conditions of the test.

NOTE 1—The agency performing this test method can be evaluated in accordance with Practice D 3740. Notwithstanding statements on precision and bias contained in this test method: the precision of this test method is dependent on the competence of the personnel performing it and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective testing. Users of this test method are cautioned that compliance with Practice D 3740 does not, in itself, ensure reliable testing. Reliable testing depends on many factors; Practice D 3740 provides a means of evaluating some of these factors.

5. Apparatus

5.1 *Analytical Balance*—An analytical balance conforming to the requirements of Class GP2 in Specification D 4753 and with Class S weights.

5.2 *Filter Paper*—Filter paper including Whatman No. 1, 11 and 15 cm in diameter; Whatman No. 41, 15 cm in diameter; and Whatman No. 2, 11 or 15 cm in diameter.

5.3 *Fifty-Millilitre-Pipet*.

5.4 *Drying Oven*—Thermostatically controlled, preferably of the forced-air type, meeting the requirements of Specification E 145 and capable of maintaining a uniform temperature of $110 \pm 5^\circ\text{C}$ throughout the drying chamber.

5.5 *Miscellaneous Apparatus*—Supplementary equipment, such as electric ovens, hot plates, a small riffle, a No. 40- (425

*A Summary of Changes section appears at the end of this standard.