Standard Method of Test for

Fineness of Portland Cement by the Turbidimeter

AASHTO Designation: T 98M/T 98-12 (2020) Technical Subcommittee: 3a, Hydraulic Cement and Lime Release: Group 1 (April) ASTM Designation: C115/C115M-10 ¹



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1. SCOPE

- 1.1. This test method covers determination of the fineness of portland cement as represented by a calculated measure of specific surface, expressed as square centimeters of total surface area per gram or square meters of total surface area per kilogram of cement, using the Wagner turbidimeter.¹
- 1.2. The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard. Values in SI units (or inch-pound units) shall be obtained by measurement in SI units (or inch-pound units) or by appropriate conversion, using the Rules for Conversion and Rounding given in IEEE/ASTM SI 10 of measurements made in other units. Values are stated in SI units when inch-pound units are not used in practice.
- **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. *AASHTO Standards*:
 - T 105, Chemical Analysis of Hydraulic Cement
 - **T** 192, Fineness of Hydraulic Cement by the 45- μ m (No. 325) Sieve
- 2.2. *ASTM Standard*:
 - C670, Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

2.3. *IEEE/ASTM Standard*:

■ SI 10, American National Standard for Metric Practice

3. SIGNIFICANCE AND USE

3.1. The purpose of this test method is to determine whether the hydraulic cement under test meets the Wagner turbidimetric fineness requirements of the applicable hydraulic cement specification for which the test is being made. Fineness of the cement component is only one of the many characteristics that influence the strength capabilities of concrete.

4. APPARATUS

4.1. *Nature of Apparatus*—The Wagner turbidimeter consists essentially of a source of light maintained at constant intensity and adjusted so that approximately parallel rays of light pass through a suspension of the cement to be tested and impinge on the sensitive plate of a photoelectric cell. The current generated in the cell is measured by means of a microammeter and the indicated reading is a measure of the turbidity of the suspension. General considerations indicate that turbidity is in turn a measure of the surface area of the suspended sample of cement. The apparatus shall consist specifically of the parts described in Sections 4.2 through 4.7, and shall be constructed in accordance with the detailed design and dimensional requirements shown in Figure 1 and Table 1, except that the case may be either of wood or of metal.