
Standard Method of Test for

**Fineness of Hydraulic Cement
by Air Permeability Apparatus**

AASHTO Designation: T 153-20

Technical Subcommittee: 3a, Hydraulic Cement and Lime

Release: Group 1 (April)

ASTM Designation: [C204-18](#)



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1. SCOPE

- 1.1. This test method covers determination of the fineness of hydraulic cement, using the Blaine air permeability apparatus, in terms of the specific surface expressed as total surface area in square centimeters per gram or square meters per kilogram of cement. Two test methods are given: Test Method A is the Reference Test Method using the manually operated standard Blaine apparatus, and Test Method B permits the use of an automated apparatus that is in accordance with the qualification requirements of this test method's demonstrated acceptable performance. Although the test method may be, and has been, used for the determination of the measures of fineness of various other materials, it should be understood that, in general, relative rather than absolute fineness values are obtained.
- 1.1.1. This test method is known to work well for portland cements. However, the user should exercise judgment in determining its suitability with regard to fineness measurements of cements with densities or porosities that differ from those assigned to Standard Reference Material No. 114 or No. 46h.
- 1.2. The values stated in SI units are to be regarded as the 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:*
- [A582/A582M](#), Standard Specification for Free-Machining Stainless Steel Bars
 - [C125](#), Standard Terminology Relating to Concrete and Concrete Aggregates
 - [C219](#), Standard Terminology Relating to Hydraulic Cement
 - [C670](#), Standard Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
 - [E832](#), Standard Specification for Laboratory Filter Papers
 - R0028, *Manual of Cement Testing* (not an ASTM standard; available as PDF only)

2.2.

Other Documents:

- No. 114, National Institute of Standards and Technology Standard Reference Material¹
- No. 46h, National Institute of Standards and Technology Standard Reference Material¹
- BS 4359: 1971 British Standard Method for the Determination of Specific Surface of Powders: Part 2: Air Permeability Methods²

TEST METHOD A: REFERENCE METHOD

3. TERMINOLOGY

3.1. *Definitions:*

3.1.1. For definitions and terms used in this test method, refer to the terminology in [ASTM C125](#) and [ASTM C219](#).

4. APPARATUS

4.1. *Nature of Apparatus*—The Blaine air permeability apparatus consists essentially of a means of drawing a definite quantity of air through a prepared bed of cement of definite porosity. The number and size of the pores in a prepared bed of definite porosity are a function of the size of the particles and determine the rate of airflow through the bed. The apparatus, illustrated in Figure 1, shall consist specifically of the parts described in Sections 4.2 to 4.8.