



Standard Guide for Evaluation of Alternative Supplementary Cementitious Materials (ASCM) for Use in Concrete¹

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1. Scope

1.1 This Guide is intended to provide a technical approach to the evaluation of alternative supplementary cementitious materials such as pozzolans and hydraulic materials that fall outside the scope of Specifications C618, C989, and C1240. This Guide provides the initial steps for a comprehensive evaluation of an ASCM that provides due diligence for its specific intended uses in concrete; however, it does not evaluate conformance to all possible performance criteria for all types of concrete mixtures.

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

1.3 Performing the tests or meeting the test limits in this guide should not imply that the material tested meets the requirements of Specifications C618, C989, and C1240. These materials should not be represented as such and each specific source is to be evaluated separately.

1.4 *This guide does not purport to address all environmental and safety concerns, if any, associated with its use. It is the responsibility of the user of this guide to establish the appropriate environmental, health, and safety issues, and identify appropriate risk management procedures.*

2. Referenced Documents

2.1 ASTM Standards:²

C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens

C78 Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)

C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

¹ This guide is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.24 on Supplementary Cementitious Materials.

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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.

C114 Test Methods for Chemical Analysis of Hydraulic Cement

C125 Terminology Relating to Concrete and Concrete Aggregates

C138/C138M Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

C143/C143M Test Method for Slump of Hydraulic-Cement Concrete

C157/C157M Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

C186 Test Method for Heat of Hydration of Hydraulic Cement

C204 Test Methods for Fineness of Hydraulic Cement by Air-Permeability Apparatus

C231/C231M Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

C232/C232M Test Method for Bleeding of Concrete

C311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete

C403/C403M Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance

C430 Test Method for Fineness of Hydraulic Cement by the 45- μ m (No. 325) Sieve

C457/C457M Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete

C469 Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression

C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

C666/C666M Test Method for Resistance of Concrete to Rapid Freezing and Thawing

C672/C672M Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals

C989 Specification for Slag Cement for Use in Concrete and Mortars

C1012/C1012M Test Method for Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution

C1064/C1064M Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete

C1202 Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration