Designation: C1073 – 12

Standard Test Method for Hydraulic Activity of Slag Cement by Reaction with Alkali[1]

This standard is issued under the fixed designation C1073; 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 rapid determination of hydraulic activity of slag cement. This test method measures the accelerated strength development of the slag cement by using sodium hydroxide solution as mixing water and curing at elevated temperature.

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 *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.* A specific warning statement is given in Section 6.

1.4 The text of this standard references notes and footnotes which provide explanatory information. These notes and footnotes (excluding those in tables) shall not be considered as requirements of this standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

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

C125 Terminology Relating to Concrete and Concrete Aggregates

C219 Terminology Relating to Hydraulic Cement

C305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

C778 Specification for Sand

C989 Specification for Slag Cement for Use in Concrete and Mortars

3. Terminology

3.1 *Definitions:*

3.1.1 Definitions are given in Terminology C125 and C219.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *slag, n*—granulated blast-furnace slag as defined in Terminology C125 and ground to cement fineness.

4. Significance and Use

4.1 This test method can be used as a quality-control test for slag production from a single source after adequate correlation with tests stipulated in Specification C989.

4.2 This test method may be used as an evaluation technique for slag cement, when an appropriate correlation with various finenesses of slag cements from a specific source ground in a specific laboratory mill has been previously developed.

4.3 The hydraulic activity as measured by this test method on slag cement samples can provide guidance to a manufacturer as to fineness level required to maintain a certain level of hydraulic activity.

4.4 While this test method is intended primarily as a quality control test, some studies have shown that the test method is capable of evaluating the hydraulic activity of slag cements from different sources.

5. Apparatus

5.1 *Three-Gang Molds for 2-in. or 50-mm Cubes and Compression Test Machine,* as specified in Test Method C109/C109M (Note 1).

NOTE 1—Silicone grease is recommended for protection of mold surfaces from the caustic solution in this test.

5.2 *Mixer,* as specified in Method C305.

5.3 *Curing Chamber,* capable of maintaining a temperature of air or water bath of 55 ± 2°C.

5.4 *Containers,* capable of holding one three-cube mold in an essentially vapor-tight condition. If polyethylene or other plastic bags are used, they shall have a closure of the zip type. If rigid containers are used, they shall have tight sealing covers (Note 2). The acceptability of containers shall be determined

[1] This test method is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregatesand is the direct responsibility of Subcommittee C09.27 on Ground Slag.

Current edition approved July 15, 2012. Published October 2012. Originally approved in 1985. Last previous edition approved in 2011 as C1073–97a(2011). DOI: 10.1520/C1073-12.

[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.