



Standard Test Method for Evaluation of Cement Strength Uniformity From a Single Source¹

This standard is issued under the fixed designation C 917; 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 is intended for use in instances where the purchaser desires information on the strength uniformity of a hydraulic cement produced at a single source. It is intended that this method normally be used for the predominant cement manufactured at a cement plant. Guidelines for sampling, testing, presentation of results, and evaluation are given.

1.2 The values stated in inch-pound 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:

C 109/C 109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)²

C 150 Specification for Portland Cement²

C 219 Terminology Relating to Hydraulic Cement²

C 595M Specification for Blended Hydraulic Cements²

C 1157M Performance Specification for Blended Hydraulic Cement²

E 456 Terminology Relating to Quality and Statistics³

3. Terminology

3.1 **Definitions**—For definitions of terms relating to this test method refer to Terminology C 219 and Terminology E 456.

4. Significance and Use

4.1 This test method is designed to present in a standardized format information on the variability of strength of cement

from a single source over a period of time. It can be applied to all hydraulic cements covered in Specifications C 150, C 595, and C 1157M.

NOTE 1—It should be recognized that concrete strength variability is influenced by other factors in addition to cement strength variability.

5. Sampling

5.1 All sampling shall be performed by quality control or testing personnel, or someone specifically trained for this purpose.

5.2 Take random grab samples from delivery units or during the loading or unloading process. Delivery units larger than 125 tons shall be sampled during loading or unloading. If samples are taken during loading or unloading, the two or more portions which are to be composited to make a sample shall be taken during the transfer to no more than 125 tons of cement. Identify samples by the date on which the cement they represent was shipped or received.

NOTE 2—Standard statistical procedures are recommended for ensuring that samples are selected by a random procedure. These procedures can be used to select the days within a month or within a week that samples will be taken. Then the delivery unit or the time of day can be chosen randomly.

5.3 If taken from a truck or rail car, take at least two separate 5-lb (approximately 2.3-kg) grab samples and thoroughly mix together to obtain a minimum 10-lb (4.5-kg) test sample. Sample only through hatches in the top of the unit. Remove approximately a 12-in. (300-mm) layer of cement. Make a hole before obtaining a sample to avoid collecting dust collector material that may be discharged into the delivery unit after the cement flow ceases.

5.4 If taken from another point in the loading or unloading process, the sample shall consist of a minimum of two separate 5-lb (approximately 2.3-kg) grab samples thoroughly mixed together or at least 10 lb (4.5 kg) as accumulated by a continuous sampler. Take care to avoid segregation and contamination of samples taken from screws, pneumatic systems, or air slides.

5.5 When samples are taken at the cement plant and shipments or rate of production of the cement exceeds 25 000 tons (23 000 Mg) per month, take samples at a rate of at least

¹ This test method is under the jurisdiction of ASTM Committee C01 on Cement and is the direct responsibility of Subcommittee C01.27 on Strength.

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² *Annual Book of ASTM Standards*, Vol 04.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.