



Designation: C 1445 – 99 (Reapproved 2005)

Standard Test Method for Measuring Consistency of Castable Refractory Using a Flow Table¹

This standard is issued under the fixed designation C 1445; 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 procedure for determining the consistency of castable refractory mixes by the flow table method.

1.2 This test method applies to regular weight castable refractories, insulating castable refractories, and castable refractories that require heavy vibration for forming, which are described in Classification C 401. They also apply to such castables containing metal fibers.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *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:*²

C 71 Terminology Relating to Refractories

C 230/C 230M Specification for Flow Table for Use in Tests of Hydraulic Cement

C 401 Classification of Alumina and Alumina-Silicate Castable Refractories

C 860 Practice for Determining the Consistency of Refractory Castable Using the Ball-in-Hand Test

D 346 Practice for Collection and Preparation of Coke Samples for Laboratory Analysis

¹ This test method is under the jurisdiction of ASTM Committee C08 on Refractories and is the direct responsibility of Subcommittee C08.09 on Monolithics.

Current edition approved Dec. 1, 2005. Published January 2006. Originally approved in 1999. Last previous edition approved in 1999 as C 1445 – 99.

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.

3. Significance and Use

3.1 The amount of water used in a castable mix for preparing test specimens has a significant influence on subsequent test results. This test method is used primarily to determine and reproduce the consistency required for the optimum casting of refractory castables in the preparation of test specimens and to express that consistency quantitatively. The correct water content is one of the major factors that must be controlled to obtain uniform test specimens. Excess water can reduce strength, increase volume shrinkage, and promote segregation of the castable ingredients. Insufficient water can produce “honeycombs” (air voids) in the castable because of poor consolidation during placement and prevent complete hydration of cement.

3.2 The flow table (see sketches in Specification C 230/C 230M) has been found to be an excellent tool for measuring the consistency of a castable and should be used in cases where a numerical result is required. Since castables differ somewhat in their “body” or plasticity, it has been found that a good casting range, expressed numerically, might vary from castable to castable. While one material may cast well between 40 and 60 % flow, another material may need to be in the 60 to 80 % flow range to properly flow. Because of this, it has been found that no arbitrary optimum range can be stated for all castables. The flow table then becomes a tool for measuring the flow and not determining it. It can allow the operator to follow the manufacturer's recommendations or to reproduce the consistency of a particular castable between laboratories.

3.3 Total time of wet mixing must be closely controlled to obtain reproducible results.

3.4 This test method is not intended to be used to determine the proper water content for gunning applications, although it may provide information of value for interpretation by a skilled operator.

4. Apparatus

4.1 *Balance*, 15-lb (6.8-kg) capacity, with sensitivity of 0.002 lb (1 g).

4.2 *Flow Table, Mold, and Calipers*, conforming to the requirements of Specification C 230/C 230M.