



## Standard Practice for Preparing Refractory Concrete Specimens by Casting<sup>1</sup>

This standard is issued under the fixed designation C 862; 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 practice covers the mixing, casting and curing of monolithic refractory concrete specimens for use in further testing. It does not apply to monolithic castable refractories intended primarily for gunning applications.

1.2 The values given in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 Various specimen sizes are required for specific test methods. Refer to these test methods to determine the size and number of specimens, which will be required from the sample.

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:

C 133 Test Methods for Cold Crushing Strength and Modulus of Rupture of Refractories<sup>2</sup>

C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory<sup>3</sup>

### 3. Significance and Use

3.1 This practice is used to standardize mixing, mold conditions, placement and curing of refractory concrete specimens to be used for testing and evaluation under other test methods.

3.2 This practice standardizes laboratory conditions for producing refractory concrete specimens to minimize laboratory-to-laboratory variation and does not attempt to duplicate the conditions of field installations.

3.3 This practice can be used for the preparation of specimens used in referee testing.

### 4. Apparatus and Conditions

4.1 *Laboratory Conditions*—The laboratory ambient should be controlled between 70 and 80°F (20 and 27°C) and from 40 to 60 % relative humidity for preconditioning materials and equipment, batching and mixing casting test specimens, stripping molds, and testing specimens. Report laboratory temperature and relative humidity with physical test results if other than specified.

4.2 *Balances*—Appropriately sized scales having a sensitivity of 0.2 % of the related batch size.

4.3 *Castable Mixers*—An electrically operated mechanical mixer<sup>4</sup> (Fig. 1) may be used for preparing castable batches for casting specimens. A 2-ft<sup>3</sup> (56.6-dm<sup>3</sup>) mixing bowl or a 2½ -ft<sup>3</sup> (70.8-dm<sup>3</sup>) concrete mixer has sufficient capacity to mix about 1 ft<sup>3</sup> of refractory castable. The smallest batches required for casting 1-in. (25-mm) square bars can be mixed in a 0.10-ft<sup>3</sup> (2.83-dm<sup>3</sup>) bowl available with bench mixers. Size mixing bowl to contain from 50 to 75 % volume loading with the dry batch.

NOTE 1—Castable water requirement variation becomes more significant as dry volume loadings drop below 40 % because the water required to wet the bowl surfaces changes more rapidly with decreasing volume loadings.

4.4 *Gang Molds*—Metal, two or more sets, as shown in Figs. 2 and 3, for casting specimens to the size required for specific physical property testing (see Note 8). The front plate of the mold illustrated is held in place by quick-release clamps (50-lbf (222-N) pull exerted by each clamp) that permit emptying the mold by releasing the clamps and tapping the left end of the front plate, thereby parting all of the separator plates and loosening the cast-test specimens.<sup>5</sup>

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee C08 on Refractories, and is the direct responsibility of Subcommittee C08.09 on Monolithic Refractories.

Current edition approved Nov 10, 2002. Published June 2003. Originally approved in 1977. Last previous edition approved in 2001 as C 862 – 01.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 15.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>4</sup> Mixers having various capacities are available from the Hobart Manufacturing Co., Troy, OH and have been found to be suitable for this purpose.

<sup>5</sup> A list of materials and notes on construction of the 9-in. (230 mm) straight-brick gang molds are available at a nominal charge from the Orton Refractory Research Center, Westerville, Ohio.