



Designation: C279 – 88 (Reapproved 2007)

## Standard Specification for Chemical-Resistant Masonry Units<sup>1</sup>

This standard is issued under the fixed designation C279; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification covers solid, kiln fired brick and tile made from clay, shale, or mixtures thereof, suitable for indoor and outdoor use in masonry construction subjected to chemical environments.

1.2 The physical and chemical properties of brick and tile differ from supplier to supplier, mainly because their composition is determined by the source of raw materials. Regardless of the differences, brick and tile are considered to be of three types as follows:

1.2.1 *Type I*—For use where low absorption and high acid resistance are not major factors.

1.2.2 *Type II*—For use where lower absorption and higher acid resistance are required.

1.2.3 *Type III*—For use where minimum absorption and maximum acid resistance are required.

NOTE 1—*Types I, II, and III* may not differ significantly in thermal shock resistance. The suitability of a given brick, for a particular application should be determined at the time of purchase by agreement between the purchaser and the supplier.

NOTE 2—*Types I and III* were formerly designated Type “H” and “L” respectively.

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

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:<sup>2</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.02 on Brick and Structural Clay Tile.

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<sup>2</sup> 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.

C20 Test Methods for Apparent Porosity, Water Absorption, Apparent Specific Gravity, and Bulk Density of Burned Refractory Brick and Shapes by Boiling Water

C67 Test Methods for Sampling and Testing Brick and Structural Clay Tile

C397 Practice for Use of Chemically Setting Chemical-Resistant Silicate and Silica Mortars

C723 Practice for Chemical-Resistant Resin Grouts for Brick or Tile

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

### 3. Physical Properties

3.1 *Strength*—The brick and tile when tested in accordance with Test Methods C67 shall conform to the requirements for modulus of rupture (flexural strength) for the type specified, as prescribed in Table 1.

3.2 *Water Absorption*—The brick and tile when tested in accordance with Test Methods C20 shall conform to the requirements for water absorption (based on the 2 h boil) for the type specified, as prescribed in Table 1.

3.3 *Sizes*—The sizes of the brick and tile shall be as specified by the purchaser. The length, width, and depth measurements of the brick or tile shall be within  $\pm 3\%$  of the specified dimensions when tested in accordance with Test Methods C67.

3.4 *Warpage*—The brick and tile when tested in accordance with Test Methods C67 shall conform to the requirements as shown in Table 2. (**Warning**—The above tolerances may not be consistent with the recommended mortar joint sizes contained in Practices C397 and C723. If brick or tile with tighter tolerances than those described in 3.3 or 3.4 are required, the purchaser shall negotiate such requirements with the manufacturer.)

3.5 *Surface Textures*—Brick or tile surfaces should be textured in order to promote better bonding. Texturing may be accomplished by scoring, wire cutting, matting, or other means consistent with a manufacturer's process. If texturing is done, the protrusion or indentation shall not exceed  $\frac{1}{8}$  in. (3 mm) in depth.