



Designation: C410 – 23

Standard Specification for Industrial Floor Brick¹

This standard is issued under the fixed designation C410; 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 specification covers brick made from clay or shale or mixtures thereof and are suitable for surfacing industrial floors. Ceramic shapes known as quarry tile are not covered by this specification.

1.2 The brick covered herein are intended for environments where resistance to chemicals, thermal shock, and/or mechanical shock is required.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[C67/C67M Test Methods for Sampling and Testing Brick and Structural Clay Tile](#)

[C279 Specification for Chemical-Resistant Masonry Units](#)

[C1232 Terminology for Masonry](#)

3. Terminology

3.1 *Definitions*—For definitions relating to industrial floor brick, refer to Terminology [C1232](#).

¹ 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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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.

4. Classification

4.1 Four types of industrial floor brick are covered ([Note 1](#)):

4.1.1 *Type T*—For use where a high degree of resistance to thermal and mechanical shock is required but low absorption is not required.

4.1.2 *Type H*—For use where resistance to chemicals and thermal shock are service factors but low absorption is not required.

4.1.3 *Type M*—For use where low absorption is required. Brick of this type are normally characterized by limited mechanical (impact) shock resistance but are often highly resistant to abrasion.

4.1.4 *Type L*—For use where minimal absorption and a high degree of chemical resistance are required. Brick of this type are normally characterized by very limited thermal and limited mechanical (impact) shock resistance but are highly resistant to abrasion.

NOTE 1—Discussion of Types of Floor Brick—The four types of brick included in this specification are designed to cover the diverse needs of many industries for floor units. Recognizing that the requirements of primary aluminum producers are quite different from those of chemical manufacturers, and similarly, that the need of a builder for brick with which to pave an airport terminal building may vary considerably from those of food processing plants, for example, a minimum of four brick types has been deemed necessary. The factors of modulus of rupture, water absorption, and chemical resistance have been selected as the basis for the classification system.

5. Physical Properties and Chemical Resistance Requirements

5.1 When tested in accordance with Test Methods [C67/C67M](#), brick shall conform to the physical requirements for the type specified as prescribed in [Table 1](#).

5.2 When tested in accordance with the sulfuric acid solubility test in Section 8 of Specification [C279](#), brick shall conform to the chemical resistance requirements for the type specified as prescribed in [Table 1](#).

6. Dimensions and Permissible Variations

6.1 The sizes of brick shall be as specified by the purchaser. The maximum permissible variations in dimensions of individual units shall not exceed those given in [Table 2](#).

*A Summary of Changes section appears at the end of this standard

TABLE 1 Physical Properties and Chemical Resistance Requirements

| Designation | Minimum Modulus of Rupture (brick flatwise), psi (MPa) gross area | | Maximum Water Absorption by 5 h Boiling, % | | Maximum Mass Loss by Chemical Resistance Test, % |
|-------------|---|-------------|--|------------|--|
| | Average of 5 Brick | Individual | Average of 5 Brick | Individual | |
| Type T | 1000 (6.9) | 750 (5.2) | 10 | 12 | ^A |
| Type H | 1000 (6.9) | 750 (5.2) | 6 | 7 | 20 |
| Type M | 2000 (13.8) | 1500 (10.3) | 2 | 2.5 | ^A |
| Type L | 2000 (13.8) | 1500 (10.3) | 1 | 1.5 | 8 |

^A No requirement.

TABLE 2 Permissible Variations in Dimensions

| Specified Dimensions, in. (mm) | Maximum Permissible Variations in Dimensions between Largest and Smallest Unit in One Lot, ^A in. (mm) |
|-------------------------------------|---|
| Up to 2 (50.8), incl | 1/16 (1.6) |
| Over 2 to 4 (50.8 to 101.6), incl | 1/8 (3.2) |
| Over 4 to 9 (101.6 to 228.6), incl | 3/16 (4.8) |
| Over 9 to 12 (228.6 to 304.8), incl | 1/4 (6.4) |

^A Size of the lot shall be determined by agreement between the purchaser and the seller.

TABLE 3 Tolerances on Warpage

| Maximum Face Dimension, in. (mm) | Maximum Permissible Deviation, in. (mm) |
|-------------------------------------|---|
| Up to 9 (228.6), incl | 1/16 (1.6) |
| Over 9 to 12 (228.6 to 304.8), incl | 3/32 (2.4) |

6.2 Tolerances for warpage of face or edges of individual brick from a plane surface and from a straight line, respectively, shall not exceed the maximum values specified in [Table 3](#).

7. Finish and Appearance

7.1 The texture of the finished surface that will be exposed when in place shall conform to an approved sample consisting of not less than four bricks, each representing the texture desired.

8. Sampling and Testing

8.1 The brick shall be sampled and tested for modulus of rupture, absorption, measurement of size, and measurement of

warpage in accordance with Test Methods [C67/C67M](#) and for chemical resistance in accordance with the sulfuric acid solubility test in Section 8 of Specification [C279](#).

8.2 The manufacturer or the seller shall furnish specimens for test. The place or places of selection shall be designated when the purchase order is placed.

9. Keywords

9.1 abrasion; absorption; chemical resistance; clay; mechanical shock; physical properties; shale; thermal shock

SUMMARY OF CHANGES

Committee C15 has identified the location of selected changes to this standard since the last issue (C410–13(2017)) that may impact the use of this standard. (June 1, 2023)

- (1) Clarified scope to align with Specification [C279](#).
- (2) In Section 5, relocated reference to Sulfuric Acid Solubility test in Section 8 of Specification [C279](#).

- (3) In Section 8, added text for responsibility of test specimens.