



Designation: C902 – 20

Standard Specification for Pedestrian and Light Traffic Paving Brick¹

This standard is issued under the fixed designation C902; 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 intended for use as paving material subjected to pedestrian and light vehicular traffic. The units are designed for use in pedestrian applications and vehicular areas that are subjected to low volumes of vehicular traffic, such as residential driveways and streets and commercial driveways (passenger drop-offs). The units are not intended to support heavy vehicular traffic covered by Specification C1272 or for industrial applications covered by Specification C410.

NOTE 1—Heavy vehicular traffic is defined as high volumes of heavy vehicles (trucks having 3 or more axles) in Specification C1272.

1.2 The property requirements of this specification apply at the time of purchase. The use of results from testing of brick extracted from masonry structures for determining conformance or nonconformance to the property requirements (Section 5) of this specification is beyond the scope of this specification.

1.3 Brick are manufactured from clay, shale, or similar naturally occurring earthy substances and subjected to a heat treatment at elevated temperatures (firing). The heat treatment must develop sufficient fired bond between the particulate constituents to provide the strength and durability requirement of this specification (see Terminology C1232).

1.4 Use of this standard and the requirements herein to evaluate and corroborate the performance of a paving unit made from other materials, or made with other forming methods, or other means of binding the materials is not covered by the scope of this standard.

1.5 The brick are available in a variety of sizes, colors, and shapes. They are available in three classes according to exposure environment and three types according to type of traffic exposure.

1.6 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.

1.7 *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
- C88/C88M Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
- C410 Specification for Industrial Floor Brick
- C418 Test Method for Abrasion Resistance of Concrete by Sandblasting
- C1232 Terminology for Masonry
- C1272 Specification for Heavy Vehicular Paving Brick

3. Terminology

3.1 *Definitions*—For definitions relating to paving brick, refer to Terminology C1232.

4. Classification

4.1 Light traffic paving brick are classified according to the severity of their use-environment. Two types of environment are considered: (1) weather and (2) traffic:

4.1.1 *Weather*—Weathering resistance is specified by one of three classes. When the class is not specified, the requirements for Class SX shall govern.

4.1.1.1 *Class SX*—Brick intended for use where the brick may be frozen while saturated with water.

4.1.1.2 *Class MX*—Brick intended for exterior use where resistance to freezing is not a factor.

4.1.1.3 *Class NX*—Brick not intended for exterior use but which may be acceptable for interior use where protected from freezing when wet.

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.

Current edition approved Dec. 15, 2020. Published December 2020. Originally approved in 1979. Last previous edition approved in 2015 as C902 – 15. DOI: 10.1520/C0902-20.

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.

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

5.2 Abrasion Resistance—The brick shall meet the requirements of either column (1) or (2) of **Table 2** for the applicable traffic use (see **4.1.2**).³

NOTE 9—Skid/slip resistance should be considered by the purchaser for uses of brick where pedestrian traffic is anticipated. Methods of testing this characteristic are under study and it is hoped that a specification for this property can be added in future revisions of this standard when suitable test methods are developed.

TABLE 2 Abrasion Resistance Property Requirements^A

	(1) Abrasion Index, ^B max	(2) Volume Abrasion Loss, ^C max, cm ³ /cm ²
Type I	0.11	1.7
Type II	0.25	2.7
Type III	0.50	4.0

^A Select the sample according to the sampling procedure of Test Methods **C67/C67M**. The brick shall meet the requirements of either column (1) or (2). The values listed shall not be exceeded by any individual unit within the sample.

^B The abrasion index is calculated from the 24-h cold water absorption in percent and the compressive strength in pounds per square inch as follows:

$$\text{Abrasion index} = \frac{100 \times \text{absorption}}{\text{compressive strength}} \quad (1)$$

Compressive strength values are influenced by specimen shape (particularly the height to width ratio of the test specimen). Therefore, a shape is specified which conforms to the data on which the abrasion index is based.⁴

The compressive strength shall be determined on specimens measuring 3⁷/₈ by 3⁷/₈ by 2¹/₄ in. ± 1/4 in. (98 by 98 by 57 mm ± 6 mm) for length, width, and height respectively. The brick shall be without core holes, other perforations or frogs. Other shaped specimens may be used provided that the producer submits evidence acceptable to the purchaser that the change in shape gives equivalent strength results to those of the specified shape.

The abrasion resistance should be determined according to Column 2 in those cases where the procedural requirements for compressive strength cannot be met.

^CThe volume abrasion loss shall be determined in accordance with Test Method **C418**, with the following changes in procedure:

(1) The sand shall be a natural silica sand from Ottawa, IL, graded to pass a No. 50 (300-μm) sieve and retained on a No. 100 (150-μm) sieve.

(2) The test shall be run on dry brick.

(3) The duration of the test shall be 2 min.

(4) The rate of sand flow shall be 400 g/min.

(5) The volume loss shall be determined by filling the abraded depression with modeling clay, striking off level with the original surface of the brick, and removing and weighing the modeling clay. The volume loss shall be calculated from the bulk density of the modeling clay. The bulk density shall be determined on each lot of modeling clay.

An alternative method of determining the weight of clay used in filling the sand-blast cavity is to determine the weight of the modeling clay sample before and after filling the cavity.