ASTM Designation: C 936-82 (Reapproved 1988)

STANDARD SPECIFICATION FOR SOLID CONCRETE INTERLOCKING PAVING UNITS[1]

This standard is issued under the fixed designation C936; the number immediately following the designation indicates the year of last reapproval. A superscript epsilon (e) indicates an editorial change since the last revision or approval.

1. SCOPE

1.1 This specification covers the requirements for interlocking concrete pavers manufactured for the construction of paved surfaces. Units shall not be greater than 6 1/2 in. (160 mm) in width, 9 1/2 in. (240 mm) in length or 5 1/2 in. (140 mm) in thickness.

1.2 Concrete units covered by this specification may be made from lightweight or normal weight aggregates or mixed lightweight and normal weight aggregates.

1.3 When particular features are desired, such as weight classification, higher compressive strength, surface textures, finish, color, or other special features, such properties should be specified separately by the purchaser. However, local sellers should be consulted as to the availability of units having the desired features.

1.4 The values stated in inch-pound units are to be regarded as the standard.

2. REFERENCED DOCUMENTS

2.1 ASTM Standards:

- C33 Specification for Concrete Aggregates[2]
- C67 Method for Sampling and Testing Brick and Structural Clay Tile[3]
- C140 Method for Sampling and Testing Concrete Masonry Units[3]
- C150 Specification for Portland Cement[4]
- C207 Specification for Hydrated Lime for Masonry Purposes[4]
- C331 Specification for Lightweight Aggregates for Concrete Masonry Units[2]
- C418 Test Method for Abrasion Resistance of Concrete by Sandblasting[2]
- C595 Specification for Blended Hydraulic Cements[4]
- C618 Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete[2]

3. MATERIALS

3.1 Cementitious Materials-Materials shall conform to the following applicable ASTM Specifications:

3.1.1 Portland Cements-Specification C150.

3.1.2 Blended Cements-Specification C595, Types IS or IP.

3.1.3 Hydrated Lime, Type S-Specification C207

3.1.4 Pozzolans-Specification C618

3.2 Aggregates shall conform to the following ASTM Specifications, except that grading requirements shall not necessarily apply:

3.2.1 Normal Weight-Specification C33.

3.2.2 Lightweight-Specification C331.

3.3 Other Constituents-Air-entraining admixtures, coloring pigments, integral water repellents, and finely ground silica shall be previously established as suitable for use in concrete and either shall conform to ASTM standards where applicable, or shall be shown by test or experience not to be detrimental to the concrete.

4. PHYSICAL REQUIREMENTS

4.1 Compressive Strength-At time of delivery to the work site, the average compressive strength of the test samples shall not be less than 8000 psi, (55 MPa) with no individual unit less than 7200 psi (50 MPa) as required in 7.2.

4.2 Absorption-The average absorption of the test samples shall not be greater than 5% with no individual unit greater than 7% as required in 7.2.

NOTE: It is the consensus of the Task Group that compressive strength does not truly express a significant property of a paving unit. Rather, a flexural property evaluated by means of a tensile splitting test will be more meaningful. Accordingly, test data are to be developed by NCMA and C27 will do an evaluation of existing data to arrive at a specification value, using the test method of ISO DIS 4180. Upon completion of these tests, compressive strength values will be replaced by a tensile splitting requirement.

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[1]This specification is under the jurisdiction of ASTM Committee C-27 on Precast Concrete Products and is the direct responsibility of Subcommittee C27.20 on Architectural and Structural Products.
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[2]Annual Book of ASTM Standards, Vol 04.02.
[3]Annual Book of ASTM Standards, Vol 04.05.
[4]Annual Book of ASTM Standards, Vol 04.01.

4.3 Resistance to Freezing and Thawing-The manufacturer shall satisfy the purchaser either by a proven field performance or a laboratory freezing-and-thawing test that the paving units have adequate resistance to freezing and thawing. If a laboratory test is used, when tested in accordance with Section 8 of Method C67, specimens shall have no breakage and not greater than 1.0% loss in dry weight of any individual unit when subjected to 50 cycles of freezing and thawing. This test shall be conducted not more than 12 months prior to delivery of the units.

4.4 Abrasion Resistance-When tested in accordance with Test Method C418, specimens shall not have a greater volume loss than 0.915 in.^{3} per 7.75 in.^{2}, (15cm^3 per 50cm^2). The average thickness loss shall not exceed 0.118 in. (3 mm).

5. PERMISSIBLE VARIATIONS IN DIMENSIONS

5.1 Length of width of units shall not differ by more than $\pm$ 1/16 in. ($\pm$ 1.66 mm) from approved samples. Heights of units shall not differ by more than $\pm$ 1/8 in. ($\pm$ 3.2 mm) from the specified standard dimension. All tests shall be performed as required in 7.2.

6. VISUAL INSPECTION

6.1 All units shall be sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction. Minor cracks incidental to the usual methods of manufacture, or minor chipping resulting from customary methods of handling in shipping and delivery, shall not be deemed as grounds for rejection.

7. SAMPLING AND TESTING

7.1 The purchaser or his authorized representative shall be accorded proper facilities to inspect and sample the units at the place of manufacture from the lots ready for delivery.

7.2 Sample and test units in accordance with Method C140, except as required in 4.3.

8. REJECTION

8.1 In case the shipment fails to conform to the specified requirements, the manufacturer may sort it, and new specimens shall be selected by the purchaser from the retained lot and tested at the expense of the manufacturer. In case the second set of specimens fails to conform to the test requirements, the entire lot shall be rejected.

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