



Designation: C139 – 17

Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes¹

This standard is issued under the fixed designation C139; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This specification covers solid precast segmental concrete masonry units made from hydraulic cement, water, and suitable mineral aggregates, with or without the inclusion of other materials. The units are intended for use in the construction of catch basins and manholes.

1.2 The text of this standard referenced notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

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 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

- C33 Specification for Concrete Aggregates
- C140 Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
- C150 Specification for Portland Cement
- C207 Specification for Hydrated Lime for Masonry Purposes
- C595 Specification for Blended Hydraulic Cements

¹ This specification is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.03 on Concrete Masonry Units and Related Units.

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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.

- C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- C989 Specification for Slag Cement for Use in Concrete and Mortars
- C1157 Performance Specification for Hydraulic Cement
- C1232 Terminology of Masonry

3. Terminology

3.1 Terminology defined in Terminology C1232 shall apply for this specification.

4. Materials

4.1 Cementitious materials shall conform to the following ASTM specifications:

- 4.1.1 Portland Cement—Specification C150.
- 4.1.2 Blended Hydraulic Cements—Specification C595.
- 4.1.3 Hydraulic Cement—Specification C1157.
- 4.1.4 Ground Blast-Furnace Slag—Specification C989.
- 4.1.5 Hydrated Lime—Type S of Specification C207.
- 4.1.6 Fly Ash—Specification C618.
- 4.1.7 Siliceous and Pozzolan Materials—Siliceous and pozzolan materials shall conform to applicable ASTM standards, or shall be shown by test or experience to be not detrimental to the durability of the concrete.

4.2 Aggregates—Aggregates shall conform to Specification C33, except grading requirements shall not apply.

4.3 Other Constituents—Air-entraining agents, coloring pigments, integral water repellents, finely ground silica, and other constituents shall be previously established as suitable for use in concrete masonry units and shall conform to applicable ASTM standards or shall be shown by test or experience not to be detrimental to the durability of the concrete masonry units or any material customarily used in masonry construction.

5. Physical Requirements

5.1 At the time of delivery to the site of the work, the units shall conform to the requirements prescribed in Table 1.

6. Dimensions and Permissible Variations

6.1 The thickness of any unit shall be not less than 5 in. (127 mm).

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

TABLE 1 Strength and Absorption Requirements

Compressive Strength, min, lb/in ² (MPa) (Average Gross Area)		Water Absorption, max, lb/ft ³ (kg/m ³)	
Average of 3 Units	Individual Units	Average of 3 Units	Individual Units
2500 (17)	2000 (13)	10 (160)	12 (192)

6.2 Overall dimensions shall not vary by more than $\pm 3\%$ from the specified dimensions.

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 Compressive strength, absorption, density, and dimensional tolerances shall be based on tests of concrete masonry units of any configuration or dimensions made with the same materials, concrete mix design, manufacturing process, and curing method, conducted in accordance with Test Methods **C140** and not more than 12 months prior to delivery.

7.3 Except as specified in Section 8, and unless otherwise agreed, the expense of inspection and testing shall be borne by the purchaser.

8. Visual Inspection

8.1 All units shall be sound and free of cracks or other defects that interfere with the proper placing of the unit.

9. Compliance

9.1 If a sample fails to conform to the specified requirements, the manufacturer shall be permitted to remove units from the shipment. A new sample shall be selected by the purchaser from remaining units from the shipment with a similar configuration and dimension and tested at the expense of the manufacturer. If the second sample meets the specified requirements, the remaining portion of the shipment represented by the sample meets the specified requirements. If the second sample fails to meet the specified requirements, the remaining portion of the shipment represented by the sample fails to meet the specified requirements.

NOTE 1—Unless otherwise specified in the purchase order, the cost of tests is typically borne as follows: (1) if the results of the tests show that the units do not conform to the requirements of this specification, the cost is typically borne by the seller; (2) if the results of the tests show that the units conform to the specification requirements, the cost is typically borne by the purchaser.

10. Keywords

10.1 catch basins; concrete masonry units; manholes; manure units

SUMMARY OF CHANGES

Committee C15 has identified the location of selected changes to this standard since the last issue (C139 – 14) that may impact the use of this standard. (June 1, 2017)

(1) Modified testing frequency in Section 7 to be based on time of delivery.

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