



Designation: **C1877—18 C1877 – 19**

Standard Specification for Adhered Concrete Masonry Units¹

This standard is issued under the fixed designation C1877; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope—Scope*

1.1 This specification covers solid, dry-cast, concrete masonry units intended for use as an interior and exterior adhered veneer and are made from portland cement, water, and suitable mineral aggregates with or without the inclusion of other materials.

1.2 The text of this specification references notes and footnotes which 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.

NOTE 1—Adhered concrete masonry units covered by this specification are made from lightweight or normal weight aggregates, or both.

NOTE 2—When particular features are desired, such as density classification, surface textures for appearance or bond, finish, color, fire resistance, insulation, acoustical properties, or other special features, such properties should be specified separately by the purchaser. Suppliers should be consulted as to the availability of adhered concrete masonry units having the desired features.

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/C33M Specification for Concrete Aggregates](#)

[C140/C140M Test Methods for Sampling and Testing Concrete Masonry Units and Related Units](#)

[C150/C150M Specification for Portland Cement](#)

[C331/C331M Specification for Lightweight Aggregates for Concrete Masonry Units](#)

[C426 Test Method for Linear Drying Shrinkage of Concrete Masonry Units](#)

[C595/C595M Specification for Blended Hydraulic Cements](#)

[C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete](#)

[C979/C979M Specification for Pigments for Integrally Colored Concrete](#)

[C989/C989M Specification for Slag Cement for Use in Concrete and Mortars](#)

[C1157/C1157M Performance Specification for Hydraulic Cement](#)

[C1232 Terminology for Masonry](#)

[C1240 Specification for Silica Fume Used in Cementitious Mixtures](#)

[C1670/C1670M Specification for Adhered Manufactured Stone Masonry Veneer Units](#)

3. Terminology

3.1 Terminology defined in Terminology [C1232](#) shall apply for this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *adhered concrete masonry unit, n*—a nonloadbearing concrete masonry unit designed to be installed with a cementitious mortar to a backing surface.

¹ This test method 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.

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

4. Materials and Manufacture

4.1 *Cementitious Materials*—Materials shall conform to the following applicable specifications:

4.1.1 *Portland Cement*—Specification **C150/C150M**.

4.1.2 *Modified Portland Cement*—Portland cement conforming to Specification **C150/C150M**, modified as follows:

4.1.2.1 *Limestone*—Calcium carbonate, with a minimum 85 % CaCO₃ content, is permitted to be added to the cement, provided these requirements of Specification **C150/C150M** as modified are met:

(1) *Limitation on Insoluble Residue*—1.5 %.

(2) *Limitation on Air Content of Mortar*—Volume percent, 22 % max.

(3) *Limitation on Loss on Ignition*—7 %.

4.1.3 *Blended Hydraulic Cements*—Specification **C595/C595M**.

4.1.4 *Hydraulic Cement*—Specification **C1157/C1157M**.

4.1.5 *Pozzolans*—Specification **C618**.

4.1.6 *Blast Furnace Slag Cement*—Specification **C989/C989M**.

4.1.7 *Silica Fume*—Specification **C1240**.

4.2 *Aggregates*—Aggregates shall conform to the following specifications, except for the grading requirements:

4.2.1 *Normal Weight Aggregates*—Specification **C333/C333M**.

4.2.2 *Lightweight Aggregates*—Specification **C331/C331M**.

NOTE 3—The grading requirements of Specifications **C333/C333M** and **C331/C331M** may not be suitable for the production of these units. Because of this, producers are allowed to modify grading to meet their needs and the requirements of this specification.

4.3 *Pigments for Integrally Colored Concrete*—Specification **C979/C979M**.

4.4 *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 purchaser, units shall conform to the physical requirements prescribed in **Table 1**.

5.2 At the time of delivery to the purchaser, the average total linear drying shrinkage of the three units tested shall not exceed 0.065 % when tested in accordance with **8.3**.

NOTE 4—The purchaser is the public body or authority, association, corporation, partnership, or individual entering into a contract or agreement to purchase or install, or both, adhered concrete masonry units. The time of delivery to the purchaser is FOB plant when the purchaser or the purchaser's agent transports the adhered concrete masonry units, or at the time unloaded at the worksite if the manufacturer or the manufacturer's agent transports the adhered concrete masonry units.

6. Dimensions, Weights, and Areas

6.1 No overall dimension (~~width~~, thickness, height, and length) shall differ by more than $\pm \frac{1}{8}$ in. (3.2 mm) from the specified standard dimensions.

6.1.1 For those units with faces altered for aesthetic purposes, overall dimensional tolerances apply only to those dimensions not affected by the altering.

NOTE 5—For such units, dimensions will vary. Consult with suppliers to determine achievable dimensional tolerances.

6.2 Units shall have an average minimum thickness of 0.75 in. (19 mm).

6.3 The specified thickness of each unit shall not exceed a maximum average thickness of 2.625 in. (66.7 mm).

6.4 Units shall not exceed 36 in. (915 mm) in any face dimension.

6.5 Units shall not exceed more than 5 ft² (0.46 m²) in total face area.

TABLE 1 Strength, Absorption, and Density Classification Requirements^A

Density Classification	Oven-Dry Density of Concrete, lb/ft ³ (kg/m ³)	Maximum Water Absorption, lb/ft ³ (kg/m ³)		Minimum Net Area Compressive Strength, lb/in. ² (MPa)	
	Average of 3 Units	Average of 3 Units	Individual Units	Average of 3 Units	Individual Units
Lightweight	Less than 105 (1680)	15 (240)	17 (272)	2000 (13.8)	1800 (12.4)
Medium Weight	105 to less than 125 (1680–2000)	13 (208)	15 (240)	2000 (13.8)	1800 (12.4)
Normal Weight	125 (2000) or more	10 (160)	12 (192)	2000 (13.8)	1800 (12.4)

^ACompressive strength, absorption, and density determined in accordance with **8.2**.