



Designation: C 588/C 588M – 03<sup>ε1</sup>

## Standard Specification for Gypsum Base for Veneer Plasters<sup>1</sup>

This standard is issued under the fixed designation C 588/C 588M; 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 Department of Defense.*

<sup>ε1</sup> NOTE—The word rating(s) was added to the term fire resistance throughout editorially October 2004.

### 1. Scope\*

1.1 This specification covers types of gypsum base that are designed to be used as a base for application of veneer plaster (see Specification C 587).

NOTE 1—Specification C 843 contains application procedures for gypsum veneer plaster, and Specification C 844 contains application procedures for gypsum base for veneer plaster.

1.2 The values stated in either inch-pound or SI (metric) units are to be regarded separately as the standard. Within the text, the SI units are shown in brackets. The values stated in each system shall be used independently of the other. Values from the two systems shall not be combined.

1.3 The text of this standard references 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.

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

- C 11 Terminology Relating to Gypsum and Related Building Materials and Systems
- C 473 Test Methods for Physical Testing of Gypsum Panel Products
- C 587 Specification for Gypsum Veneer Plaster
- C 645 Specification for Nonstructural Steel Framing Members
- C 843 Specification for Application of Gypsum Veneer Plaster
- C 844 Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.01 on Specifications and Test Methods for Gypsum Products.

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<sup>2</sup> 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.

C 1264 Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Board

E 96 Test Methods for Water Vapor Transmission of Materials

E 119 Test Methods for Fire Tests of Building Construction and Materials

### 3. Terminology

3.1 *Definitions*—Definitions of terms used in this specification shall be in accordance with Terminology C 11.

### 4. Materials and Manufacture

4.1 Gypsum base for veneer plaster shall consist of a noncombustible core, essentially gypsum, surfaced with paper bonded to the core.

4.2 Foil-backed gypsum base for veneer plasters shall consist of gypsum base for veneer plasters with a layer of aluminum foil laminated to the back surface.

4.3 Gypsum base for veneer plaster, type X (special fire-resistant) designates gypsum base complying with this specification that provides not less than 1-h fire resistance rating for boards 5/8 in. [15.9 mm] thick or 3/4-h fire resistance rating for boards 1/2 in. [12.7 mm] thick, applied parallel with and on each side of load bearing 2 by 4 wood studs spaced 16 in. [406 mm] on center with 6d coated nails, 1 7/8 in. [48 mm] long, 0.0915 in. [2.32 mm] diameter shank, 1/4 in. [6.4 mm] diameter heads, spaced 7 in. [178 mm] on center with gypsum base joints staggered 16 in. [406 mm] on each side of the partition and tested in accordance with Test Methods E 119.

NOTE 2—Consult manufacturers for independent test data on assembly details and fire resistance ratings for other types of construction. See fire test reports or listings from recognized fire testing laboratories for assembly particulars, materials, and ratings.

### 5. Physical Requirements

5.1 Specimens shall be taken from the samples obtained in accordance with Specification C 1264.

5.2 Specimens shall be tested in accordance with Test Methods C 473.

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

**5.2.1 Flexural Strength**—The specimens shall be tested face up and face down. The average breaking load shall be not less than the following:

Thickness, in. [mm]	Method A		Method B	
	Load, lbf [N] Bearing Edges Across Fiber of Surfacing	Load, lbf [N] Bearing Edges Parallel to Fiber of Surfacing	Load, lbf [N] Bearing Edges Across Fiber of Surfacing	Load, lbf [N] Bearing Edges Parallel to Fiber of Surfacing
3/8 [9.5]	80 [356]	30 [133]	77 [343]	26 [116]
1/2 [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
5/8 [15.9]	150 [667]	50 [222]	147 [654]	46 [205]

**5.2.2 Humidified Deflection**—Specimens shall have an average deflection of no more than the following:

Thickness, in. [mm]	Humidified Deflection, Eighths of an inch [mm]
3/8 [9.5]	15 [48]
1/2 [12.7]	10 [32]
5/8 [15.9]	5 [16]

**5.2.3 Core, End, and Edge Hardness**—Specimens shall have an average hardness of not less than 15 lbf [67 N] when tested by Method A and 11 lbf [49 N] when tested by Method B for the core, ends, or edges.

**5.2.4 Nail Pull Resistance**—Specimens shall have an average nail pull resistance of not less than the following:

Thickness, in. [mm]	Method A Nail Pull Resistance, lbf [N]	Method B Nail Pull Resistance, lbf [N]
3/8 [9.5]	60 [267]	56 [249]
1/2 [12.7]	80 [356]	77 [343]
5/8 [15.9]	90 [400]	87 [387]

**5.2.5 Permeance**—Specimens of foil-backed gypsum base for veneer plaster shall have a permeance of not more than 0.30 perm [17 ng/Pa · s · m<sup>2</sup>] for the condition of 50 % relative humidity on Side I (the face of the board) and 0 % relative humidity on Side II (the foil-covered back of the board) when tested in accordance with the Desiccant Procedure of Test Methods E 96.

## 6. Dimensions and Tolerances

6.1 Specimens shall be taken from the samples obtained in accordance with Specification C 1264.

6.2 Thickness, width, length, and end squareness shall be determined in accordance with Test Methods C 473.

6.2.1 **Thickness**—The nominal thickness shall be 3/8, 1/2, or 5/8 in. [9.5, 12.7, or 15.9 mm], with tolerances in the nominal thickness of ± 1/64 in. [± 0.4 mm], and with local variations of ± 1/32 in. [± 0.8 mm] from the nominal thickness.

6.2.2 **Width**—The nominal width shall be 48 in. [1220 mm] with a tolerance of 3/32 in. [3 mm] under the specified width.

6.2.3 **Length**—The nominal length shall be from 6 to 16 ft [1830 to 4880 mm] with a tolerance of ± 1/4 in. [± 6 mm] from the specified length.

6.2.4 **Tapered Edge Depth**—The average thickness of the edge of recessed or tapered edge shall be not less than 0.015 in. [0.38 mm] but not more than 0.075 in. [1.90 mm] less than the average thickness of the gypsum base for veneer plaster.

6.2.5 **End Squareness**—Corners shall be square with a tolerance of ± 1/8 in. [3 mm] in the full width of the board.

6.3 **Edges and Ends**—The edges and ends shall be straight and either square, beveled, featured, tapered, or featured and tapered.

## 7. Finish and Appearance

7.1 The surface of gypsum base for veneer plaster shall be free of any imperfections or foreign substances that render it unfit for the intended use.

## 8. Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage

8.1 Sampling, inspection, rejection, certification, packaging, marking, shipping, handling, and storage of gypsum base for veneer plasters shall be in accordance with Specification C 1264.

## 9. Keywords

9.1 gypsum base; gypsum board; veneer plaster

## APPENDIX

### (Nonmandatory Information)

This Appendix gives general information and also suggestions for inclusions to be made elsewhere by the specifier. They are not part of this specification.

The definition of type X as given in 4.3 and the alternate definition given in this Appendix, are intended only as a test to define the gypsum board as meeting the requirements of type X. These tests do not indicate a preferred application nor do they limit the use of the product in other fire rated assemblies.

All gypsum panel products for which type X is defined, except gypsum lath and gypsum shaftliner board, use the same test for type X products, therefore, the type X definition indicates a consistent level of fire resistance.

## **X1. ALTERNATE DEFINITION FOR TYPE X**

X1.1 Gypsum base for veneer plaster, type X (special fire-resistant) designates gypsum base for veneer plaster providing a greater fire resistance than regular gypsum base for veneer plaster of the same thickness. Type X (special fire-resistant) gypsum base for veneer plaster, when tested in accordance with Test Methods E 119, shall provide the following minimum fire resistance ratings for the assemblies described.

X1.1.1 One hour for a  $\frac{5}{8}$ -in. [15.9-mm] thickness applied to a partition in a single layer application on each side of  $3\frac{5}{8}$ -in. [92-mm] deep non-load bearing galvanized steel studs complying with Specification C 645 spaced 24 in. [610 mm] on center. The  $\frac{5}{8}$ -in. [15.9-mm] thick gypsum base for veneer plaster 48 in. [1220 mm] wide shall be attached using 1-in. [25-mm] long drywall screws spaced 8 in. [203 mm] on center along the edges and ends, and 12 in. [305 mm] along intermediate studs. All joints shall be oriented parallel to and located over studs and staggered on opposite sides of the assembly. All joints shall be covered with joint reinforcing tape or mesh and covered with a coat of joint compound or veneer plaster. All screw heads shall be covered with joint compound or veneer plaster, and

X1.1.2 Two hours for a  $\frac{1}{2}$ -in. [12.7-mm]) thickness applied to a partition in a double layer application on each side of  $2\frac{1}{2}$ -in. [64-mm] deep non-loadbearing galvanized steel studs complying with Specification C 645 spaced 24 in. [610 mm] on center. The 48-in. [1220-mm] wide base layer shall be attached using 1 in. [25 mm] long drywall screws spaced 12 in. [305 mm] on center along board edges, ends and along intermediate studs. Joints shall be oriented parallel to and located over studs and staggered on opposite sides of the assembly. The 48-in. [1220-mm] wide face layer shall be attached using  $1\frac{5}{8}$ -in. [41-mm] long drywall screws spaced 12 in. [305 mm] along board edges, ends and along intermediate studs. Joints shall be oriented parallel to and located over studs, offset 24 in. [610 mm] from the base layer joints, and staggered on opposite sides of the assembly. All joints in the face layer shall be covered with joint reinforcing tape or mesh and covered with a coat of joint compound or veneer plaster. All screw heads in the face layer shall be covered with joint compound or veneer plaster.

## **SUMMARY OF CHANGES**

Committee C11 has identified the location of selected changes to this specification since the last issue, C 588/C 588M-01, which may impact the use of this specification. (Approved October 1, 2003)

(I) Revised 6.3.

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