



## 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

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

### 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.

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:

- C 11 Terminology Relating to Gypsum and Related Building Materials and Systems<sup>2</sup>
- C 473 Test Methods for Physical Testing of Gypsum Panel Products<sup>2</sup>
- C 645 Specification for Nonstructural Steel Framing Members<sup>2</sup>
- C 1264/C 1264M Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Board<sup>2</sup>
- E 96 Test Methods for Water Vapor Transmission of Materials<sup>3</sup>
- E 119 Test Methods for Fire Tests of Building Construction and Materials<sup>4</sup>

### 3. Terminology

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

### 4. Materials and Manufacture

4.1 Gypsum base for veneer plaster shall consist of a

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.06.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.07.

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 for boards  $\frac{5}{8}$  in. [15.9 mm] thick or  $\frac{3}{4}$  h fire-resistance for boards  $\frac{1}{2}$  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,  $1\frac{7}{8}$  in. [48 mm] long, 0.0915 in. [2.32 mm] diameter shank,  $\frac{1}{4}$  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 1—Consult manufacturers for independent test data on assembly details and fire resistance classifications for other types of construction. See official fire test reports for assembly particulars, materials, and classifications.

### 5. Physical Requirements

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

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

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
$\frac{3}{8}$ [9.5]	80 [356]	30 [133]	77 [343]	26 [116]
$\frac{1}{2}$ [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
$\frac{5}{8}$ [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]
$\frac{3}{8}$ [9.5]	15 [48]

1/2 [12.7]  
5/8 [15.9]

10 [32]  
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/C 1264M.

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, recessed, beveled, featured, tapered, or featured 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/C 1264M.

## 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 definition test to define the gypsum board as meeting the requirements of Type X. These definition 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 use the same definition test for Type X products, therefore, the Type X designation 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 for the assemblies described.

X1.1.1 One hour for a 5/8 in. [15.9 mm] thickness applied to a partition in a single layer application on each side of 3 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 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 1/2 in. [12.7 mm] thickness applied to a partition in a double layer application on each side of 2 1/2 in. [64 mm] deep non-load bearing 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<sup>5</sup>/<sub>8</sub> 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

This section identifies the location of changes to this specification that have been incorporated since the last issue. Committee C-11 has highlighted those changes that affect the technical interpretation or use of this specification.

(1) The designation was changed to a dual inch-pound/SI standard.

(2) Paragraph 1.2 was revised to designate a dual inch-pound/SI standard.

(3) Paragraph 2.1 was revised to show changes in the title to Test Methods C 473 and Specification C 645, and to add a reference to Specification C 1264/C 1264M.

(4) Added new Section 3 on Terminology.

(5) Added new paragraphs 5.1 and 6.1.

(6) Revised paragraphs 5.2.1 through 5.2.5 and 6.2.1 through 6.3.

(7) Added new Section 8 to refer to Specification C 1264/C 1264M.

(8) Deleted Sections 7 through 11 and replaced with new Section 8.

(9) All SI units were placed in brackets.

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