



## Standard Specification for Water-Resistant Gypsum Backing Board<sup>1</sup>

This standard is issued under the fixed designation C 630/C 630M; 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.*

### 1. Scope\*

1.1 This specification covers water-resistant gypsum backing board that is designed primarily to be used as a base for the application of ceramic or plastic tile on walls or ceilings. This product is also suitable for decoration.

NOTE 1—Specification C 840 contains application procedures for water-resistant gypsum backing board.

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

1.3 The text of this standard 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.

### 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 645 Specification for Nonstructural Steel Framing Members

C 840 Specification for Application and Finishing of Gypsum Board

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

E 11 Test Methods for Fire Tests of Building Construction and Materials

### 3. Terminology

3.1 Definitions used in this specification shall be in accordance with Terminology C 11.

### 4. Materials and Manufacture

4.1 Water-resistant gypsum backing board shall consist of a noncombustible water-resistant core, essentially gypsum, surfaced on both the face and back of the board with waterrepellent paper bonded to the core.

4.2 Water-resistant gypsum backing board, type X (special fire resistant), designates water-resistant gypsum backing board 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  $2 \times 4$  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 backing board joints staggered 16 in. [406 mm] on each side of the partition and tested in accordance with the requirements of Test Methods E 119.

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

### 5. Physical Properties

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.

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
$\frac{1}{2}$ [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
$\frac{5}{8}$ [15.9]	150 [667]	50 [222]	147 [654]	46 [205]

<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](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

**5.2.2 Humidified Deflection**—The specimens shall have an average deflection of not more than the following:

Thickness, in. [mm]	Humidified Deflection, Eighths of an in. [mm]
½ [12.7]	10 [32]
⅝ [15.9]	5 [16]

**5.2.3 Core, End, and Edge Hardness**—The 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.

**5.2.4 Nail Pull Resistance**—The specimen 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]
½ [12.7]	80 [356]	77 [343]
⅝ [15.9]	90 [400]	87 [387]

**5.2.5 Water Resistance**—The three specimens selected shall have an average water absorption of not more than 5 weight % after 2 h of immersion.

**5.2.6 Surface Water Absorption**—The specimens shall have an average surface water absorption of not more than 1.6 g on each surface, face and back, after 2 h of elapsed time.

## 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, tapered edge depth, and end squareness shall be determined in accordance with Test Methods C 473.

**6.2.1 Thickness**—The nominal thickness shall be ½ or ⅝ in. [12.7 or 15.9 mm] with tolerances in the nominal thickness of ⅛ in. [0.4 mm] with local variations of ⅜ in. [0.8 mm] from the nominal thickness.

**6.2.2 Width**—The nominal width shall be up to 48 in. [1220 mm], or up to 54 in. [1370 mm], with a tolerances of ⅜ in. [3 mm] under the specified width.

**6.2.3 Length**—The nominal length and tolerances shall be as follows:

Thickness, in. [mm]	Length, ft [mm]	Tolerances, in. [mm]
½ [12.7]	4 to 16 [1220 to 4880]	±¼ [6]
⅝ [15.9]	4 to 16 [1220 to 4880]	±¼ [6]

**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 water-resistant gypsum backing board.

**6.2.5 End Squareness**—Corners shall be square with a tolerance of ⅛ 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 surfaces of water-resistant gypsum backing board shall be true and free from imperfections that would render the board unfit for its designed 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 water-resistant gypsum backing board shall be in accordance with Specification C 1264.

## 9. Keywords

9.1 ceiling; gypsum; partitions; wall; water-resistant gypsum backing board; water-resistant gypsum backing board; type X



## 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 is given in 4.2 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 Water-resistant gypsum backing board, type X (special fire-resistant) designates water-resistant gypsum backing board providing a greater fire resistance than regular water-resistant gypsum backing board of the same thickness. Type X (special fire-resistant) water-resistant gypsum backing board, 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  $\frac{5}{8}$ -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-loadbearing galvanized steel studs complying with Specification C 645, spaced 24 in. [610 mm] on center. The  $\frac{5}{8}$ -in. [15.9-mm] thick water-resistant gypsum backing board 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 filled with joint compound, covered with joint tape, and covered with another coat of joint compound. All screw heads shall be covered with joint compound, 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  $1\frac{3}{8}$ -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 filled with joint compound, covered with joint tape, and covered with another coat of joint compound. All screw heads in the face layer shall be covered with two coats of joint compound.

### SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C 630/C 630M-01, which may impact the use of this specification. (Approved October 1, 2003)

(I) Revised 6.3.



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