



Designation: **C 79/C 79M – 034**

## Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board<sup>1</sup>

This standard is issued under the fixed designation C 79/C 79M; 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 treated core and nontreated core gypsum sheathing, which is designed to be used as a sheathing on buildings.

NOTE 1—Specification C 1280 contains application procedures for gypsum sheathing board.

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.

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<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.

Current edition approved ~~June 10, 2003~~; Jan. 1, 2004. Published ~~August 2003~~; February 2004. Originally approved in 1930. Last previous edition approved in 2004~~3~~ as C 79/C 79M – 04~~3~~.

\*A Summary of Changes section appears at the end of this 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 1264 Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Board

C 1280 Specification for Application of Gypsum Sheathing

E 119 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 Gypsum sheathing shall consist of a noncombustible core, essentially gypsum, surfaced on both the face and the back with water-repellent paper bonded to the core.

4.1.1 Treated core gypsum sheathing shall have a water-resistant material incorporated into the core.

4.1.2 Nontreated core gypsum sheathing shall not be required to have a water-resistant material incorporated in the core.

4.2 *Gypsum Sheathing, Type X (Special Fire-Resistant)*, designates gypsum sheathing 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 centers with 6d coated nails,  $1\frac{7}{8}$  in. [48 mm] long, 0.0915-in. [2.3-mm] diameter shank,  $\frac{1}{4}$ -in. [6.4-mm] diameter heads, spaced 7 in. [178 mm] on center with gypsum sheathing joints staggered 16 in. [406 mm] on each side of the partition and tested in accordance with 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 8.1.

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

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

<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*, Vol 04.04, volume information, refer to the standard's Document Summary page on the ASTM website.

Thickness in. [mm]	Method A	Method A	Method B	Method B
	Bearing Edges Perp to Panel Length lbf [N]	Bearing Edges Par to Panel Length lbf [N]	Bearing Edges Perp to Panel Length lbf [N]	Bearing Edges Par to Panel Length lbf [N]
3/8 [9.5]	80 [356]	30 [133]	77 [343]	26 [116]
4/10 [10.2]	88 [391]	32 [142]	85 [378]	28 [125]
1/2 [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
5/8 [15.9]	150 [667]	50 [222]	147 [654]	46 [205]

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

Thickness in. [mm]	Deflection eighths of an inch [mm]
3/8 [9.5]	15 [48]
4/10 [10.2]	12 [38]
1/2 [12.7]	10 [32]
5/8 [15.9]	5 [16]

5.1.4 *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.

5.1.5 *Nail Pull Resistance*—The specimens shall have an average nail-pull resistance of not less than the following:

Thickness in. [mm]	Method A lbf [N]	Method B lbf [N]
3/8 [9.5]	60 [267]	56 [249]
4/10 [10.2]	70 [312]	67 [298]
1/2 [12.7]	80 [356]	77 [343]
5/8 [15.9]	90 [400]	87 [387]

5.1.6 *Water Resistance of Treated Core Gypsum Sheathing* —The specimens shall have an average water absorption of not more than 10 weight % after 2-h immersion.

5.1.7 *Surface Water Absorption of Gypsum Sheathing* —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 8.1.

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, 4/10, 1/2, or 5/8 in. [9.5, 10.2, 12.7, or 15.9 mm] with tolerances in the thickness of  $\pm 1/32$  in. [ $\pm 0.8$  mm], and with local variations of  $\pm 1/16$  in. [ $\pm 1.6$  mm] from the nominal thickness.

6.2.2 *Width*—The nominal width shall be 24 or 48 in. [610 or 1220 mm], with tolerances of  $\pm 1/8$  in. [ $\pm 3$  mm] from the specified width.

6.2.3 *Length*—The nominal length shall be from 6 to 12 ft [1830 to 3660 mm] with tolerances of  $\pm 1/4$  in. [ $\pm 6$  mm] from the specified length.

6.2.4 *End Squareness*—Shall be square with tolerances of  $\pm 1/8$  in. [ $\pm 3$  mm] in the full width of the board.

6.3 *Edges and Ends*—~~Shall be straight—The edges and solid edges ends shall be straight and~~ either square or V-tongue and groove.

## 7. Finish and Appearance

7.1 Gypsum sheathing shall be free of any cracks and imperfections that would render it unfit for its 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 sheathing shall be in accordance with Specification C 1264.

8.2 Treated core gypsum sheathing shall be marked legibly on the face ~~or the back~~ as treated core.

8.3 Nontreated core gypsum sheathing shall be marked legibly on the face as nontreated core.

## 9. Keywords

9.1 gypsum; gypsum board; gypsum sheathing; sheathing; type X; water resistant core

**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 4.2 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 designation indicates a consistent level of fire resistance.

**X1. ALTERNATE DEFINITION FOR TYPE X**

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

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 35/8-in. [92-mm] deep non-loadbearing galvanized steel studs complying with Specification C 645, spaced 24 in. [610 mm] on center. The 5/8-in. [15.9-mm] thick gypsum sheathing 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.

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-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 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.

**SUMMARY OF CHANGES**

Committee C11 has identified the location of selected changes to this ~~standard~~ specification since the last issue (C 79/C 79M-01)<sup>3</sup>, that may impact the use of this specification. (Approved January 1, 2004)

(I) Revised paragraphs 6.3 and 8.2

Committee C11 has identified the location of selected changes to this specification since the last issue, C 79/C 79M-01, that may impact the use of this specification. (Approved June 10, 2003)

(I) Paragraph 8.3 was added.

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