



Designation: C1396/C1396M – 17

Standard Specification for Gypsum Board¹

This standard is issued under the fixed designation C1396/C1396M; 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.

1. Scope*

1.1 This specification covers the gypsum boards described in 1.1.1 – 1.1.9.

NOTE 1—Specifications C840, C841, C844 and C1280 contain application procedures for gypsum board.

1.1.1 *Gypsum wallboard*, designed for use on walls, ceilings, or partitions and that affords a surface suitable to receive decoration.

1.1.2 *Predecorated gypsum board*, designed for use as the finished surfacing for walls, ceilings, or partitions.

1.1.3 *Gypsum backing board, coreboard, and shaftliner board*, designed for use as a base in multilayer systems or as a gypsum stud or core in semisolid or solid gypsum board partitions, or in shaft wall assemblies.

NOTE 2—The terms backing board, coreboard, and shaftliner board refer to different end uses. The term gypsum backing board, as used in this specification, shall include gypsum coreboard and gypsum shaftliner board unless otherwise stated.

1.1.4 *Water-resistant gypsum backing board*, 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.

1.1.5 *Exterior gypsum soffit board*, designed for use on exterior soffits and carport ceilings that are completely protected from contact with liquid water.

1.1.6 *Gypsum sheathing board*, designed for use as sheathing on buildings.

1.1.7 *Gypsum base for veneer plaster*, designed for use as a base for the application of gypsum veneer plaster.

1.1.8 *Gypsum lath*, designed for use as a base for the application of gypsum plaster.

1.1.9 *Gypsum ceiling board*, designed for use on interior ceilings with framing spaced not more than 24 in. [610 mm] on center and that affords a surface suitable to receive water-based texture and other decoration. This product is also suitable for use on interior walls.

¹ 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 July 1, 2017. Published July 2017. Originally approved in 1998. Last previous edition approved in 2014 as C1396/C1396M – 14a. DOI: 10.1520/C1396_C1396M-17.

1.2 Specifications applicable to all gypsum boards are located in Section 1 – 4 and 13 – 15. Specifications applicable to specific gypsum boards are located in the following sections:

	Section
Gypsum Wallboard, Predecorated Gypsum Board, and Laminated Gypsum Board	5
Gypsum backing board, gypsum coreboard, gypsum shaftliner board	6
Water-resistant gypsum backing board	7
Exterior gypsum soffit board	8
Gypsum sheathing board	9
Gypsum base for veneer plaster	10
Gypsum lath	11
Gypsum Ceiling Board	12

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard

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

C11 Terminology Relating to Gypsum and Related Building Materials and Systems

C22/C22M Specification for Gypsum

C471M Test Methods for Chemical Analysis of Gypsum and Gypsum Products (Metric)

C473 Test Methods for Physical Testing of Gypsum Panel Products

C645 Specification for Nonstructural Steel Framing Members

C840 Specification for Application and Finishing of Gypsum Board

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



- C841 Specification for Installation of Interior Lathing and Furring
- C844 Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster
- C1264 Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Panel Products
- C1280 Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing
- D3273 Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- E84 Test Method for Surface Burning Characteristics of Building Materials
- E96/E96M Test Methods for Water Vapor Transmission of Materials
- E119 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 C11.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *decorative coating, n*—a paint or other liquid material with or without aggregate.

3.2.2 *decorative sheet or film, n*—a plastic film, either backed or unbacked; plastic sheet; or combination of these.

3.2.3 *edge, n*—the bound edge as manufactured.

3.2.4 *gypsum backing board, n*—a ¼ to ⅝-in. [6.4 to 15.9-mm] gypsum board used as a backing for gypsum wallboard, acoustical tile, or other dry cladding.

3.2.5 *gypsum coreboard, n*—a ¾ to 1-in. [19.0 to 25.4-mm] gypsum board used as a gypsum stud or core in semisolid or solid gypsum board partitions.

3.2.6 *nominal thickness, n*—the manufacturer-stated fractional value of thickness of the gypsum panel product expressed in decimal value to the nearest one-thousandth ($\frac{1}{1000}$) of an inch.

4. Materials and Manufacture

4.1 Gypsum board shall consist of a noncombustible core of gypsum complying with Specification C22/C22M, surfaced with paper bonded to the core.

4.1.1 Gypsum sheathing board shall consist of a noncombustible water-resistant core of gypsum complying with Specification C22/C22M, surfaced on both the face and back with water-repellant paper bonded to the core.

4.1.2 Gypsum coreboard shall be either a single board or composed of two factory-laminated gypsum boards to provide up to 1 in. [25.4 mm] total nominal thickness.

4.1.3 Water-resistant gypsum backing board shall consist of a noncombustible water-resistant core of gypsum complying with Specification C22/C22M, surfaced on both the back and face with water-repellant paper bonded to the core.

4.1.4 Predecorated gypsum board shall consist of a noncombustible core of gypsum complying with Specification C22/

C22M, surfaced with paper bonded to the core with the face covered with a decorative sheet, film, or coating.

4.1.4.1 Class I predecorated gypsum board shall have a decorative sheet or film laminated to the face.

4.1.4.2 Class II predecorated gypsum board shall have a decorative coating applied to the face.

4.1.5 Laminated gypsum board shall consist of two or more factory laminated gypsum boards that conform to this specification.

4.2 The back surface of foil-backed gypsum board shall in addition be covered with aluminum foil.

4.3 Gypsum board, mold resistant, designates gypsum board having not more than 20 % mold growth, based on surface area coverage, when tested in accordance with Test Method D3273.

4.4 *Gypsum Board, type X (Special Fire-Resistant):*

4.4.1 *Gypsum Board, type X*, designates gypsum board, except gypsum lath, gypsum coreboard, and gypsum shaftliner board, complying with this specification that provides not less than 1 h fire-resistance rating for boards ⅝ in. [15.9 mm] thick or ¾ h fire-resistance rating for boards ½ 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, 1⅞ in. [48 mm] long, 0.0915-in. [2.3-mm] diameter shank, ¼-in. [6.4-mm] diameter heads, spaced 7 in. [178 mm] on centers with gypsum board joints staggered 16 in. [406 mm] on each side of the partition and tested in accordance with Test Methods E119.

4.4.2 *Gypsum Lath, type X* designates gypsum lath complying with this specification that provides not less than a 1-h fire-resistance rating for gypsum lath ⅜ in. [9.5 mm] thick, when applied at right angles to and on each side of loadbearing 2 × 4 wood studs spaced 16 in. [406 mm] on centers with blue lath nails spaced 5 in. [127 mm] on centers over which is applied ½ in. [12.7 mm] 1:2 gypsum sand plaster and tested in accordance with the requirements of Test Method E119.

NOTE 3—Consult producers 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.

4.4.3 Gypsum shaftliner board, type X, designates gypsum shaftliner board complying with this specification that meets the acceptance criteria for temperature rise for not less than 1-½ h for boards ¾-in. [19.0 mm] thick or 2 h for boards 1-in. [25.4 mm] thick, when applied in a double layer solid nonload bearing partition as described in 4.4.3.1 and tested in accordance with Test Methods E119 with thermocouple locations as specified in 4.4.3.2.

4.4.3.1 Two layers of gypsum shaftliner board applied vertically and friction fit into vertical 25-gauge steel “H” members, 1-½-in. [38.1 mm] deep for boards ¾-in. [19.0 mm] thick or 2-in. [50.8 mm] deep for boards 1-in. [25.4 mm] thick, spaced 24-in. [610 mm] on centers and 25-gauge steel track at the perimeter of the partition. “H” members shall be formed with a single web or shall be two pieces of perimeter track fastened together along the web with screws spaced 24-in. [610 mm] on centers.

4.4.3.2 Temperature rise on the unexposed surface shall be measured using not less than five thermocouples; one shall be located at the center of the assembly and one shall be located at the center of each quadrant. Thermocouples shall be located not less than 3-in. [76 mm] from an “H” member.

4.5 Gypsum wallboard, gypsum backing board, exterior gypsum soffit board, and gypsum ceiling board shall have a flame spread index of not more than 25 when tested in accordance with Test Method E84.

4.6 Physical Properties, Dimensions, and Tolerances of Gypsum Board:

4.6.1 Specimens shall be taken from the samples obtained in accordance with Specification C1264.

4.6.1.1 Specimens shall be tested in accordance with Test Methods C473.

4.6.2 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.

4.6.2.1 When testing laminated gypsum board, if the laminated components are the same product and thickness, the test shall be conducted on either component of the laminated product. If the laminated gypsum board is comprised of different products or thicknesses, each component shall be tested.

4.6.3 Edges and Ends—The edges and ends shall be straight.

4.6.4 Length—The tolerance in length shall be $\pm \frac{1}{4}$ in. [± 6 mm].

4.6.5 Tapered Edge Depth—The average thickness of the edge of recessed or tapered edge gypsum board shall be not less than 0.020 in. [0.51 mm] but not more than 0.090 in. [2.29 mm] less than the average thickness of the gypsum board.

4.6.6 The method for determining properties for a nominal thickness not listed in the tables of Sections 5 through 12 shall be calculated as detailed in 4.6.6.1 and 4.6.6.2.

4.6.6.1 For a board whose nominal thickness is not specified in the tables in Sections 5 through 12 interpolate between the two adjacent thicknesses in the tables.

4.6.6.2 Properties shall not be extrapolated to nominal thicknesses outside the range of values specified in the tables.

4.7 Volatile Sulfur Compounds:

4.7.1 Gypsum board shall contain not greater than 10 ppm of orthorhombic cyclooctasulfur (S_8), when tested in accordance with Test Methods C471M.

NOTE 4—When exposed to heat, humidity, or both, gypsum board containing S_8 in quantities above 10 ppm may emit volatile sulfur compounds in quantities that cause abnormal corrosion on electrical wiring, plumbing pipes, fuel gas lines, HVAC equipment, or any components of the foregoing.

5. Gypsum Wallboard, Predecorated Gypsum Board, and Laminated Gypsum Board

5.1 Physical Properties of Gypsum Wallboard, Predecorated Gypsum Board, and Laminated Gypsum Board:

5.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel to Panel Length, lbf [N]
$\frac{1}{4}$ [6.4]	50 [222]	20 [89]	46 [205]	16 [71]
$\frac{5}{16}$ [7.9]	65 [289]	25 [111]	62 [276]	21 [93]
$\frac{3}{8}$ [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]
$\frac{3}{4}$ [19.0]	170 [756]	60 [267]	167 [743]	56 [249]

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

Thickness, in. [mm]	Deflection, eighths of an inch [mm]
$\frac{1}{4}$ [6.4]	not required
$\frac{5}{16}$ [7.9]	not required
$\frac{3}{8}$ [9.5]	15 [48]
$\frac{1}{2}$ [12.7]	10 [32]
$\frac{5}{8}$ [15.9]	5 [16]
$\frac{3}{4}$ [19.0]	5 [16]

5.1.3 *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]
$\frac{1}{4}$ [6.4]	40 [178]	36 [160]
$\frac{5}{16}$ [7.9]	50 [222]	46 [205]
$\frac{3}{8}$ [9.5]	60 [267]	56 [249]
$\frac{1}{2}$ [12.7]	80 [356]	77 [343]
$\frac{5}{8}$ [15.9]	90 [400]	87 [387]
$\frac{3}{4}$ [19.0]	100 [445]	97 [432]

5.1.4 *Foil-Backed Gypsum Wallboard and Foil-Backed Predecorated Gypsum Board:*

5.1.4.1 Foil-backed gypsum wallboard and foil-backed predecorated gypsum board shall meet all of the requirements for gypsum wallboard and predecorated gypsum board.

5.1.4.2 When tested in accordance with Test Methods E96/E96M, the permeance of foil-backed gypsum wallboard and foil-backed predecorated gypsum board shall be not more than 0.30 perm [$17 \text{ ng/Pa}\cdot\text{s}\cdot\text{m}^2$] (Desiccant Method) for the condition of 50 % relative humidity on the face of the board, and 0 % relative humidity on the back (foil-covered) side of the board.

5.2 *Dimensions and Tolerances of Gypsum Wallboard, Predecorated Gypsum Board, and Laminated Gypsum Board:*

5.2.1 *Thickness*—The thickness shall be from $\frac{1}{4}$ to $\frac{3}{4}$ in. [6.4 to 19.0 mm] with tolerances of ± 0.015 in. [± 0.40 mm], and with local variations of ± 0.030 in. [± 0.80 mm].

5.2.2 *Width*—The width shall be up to 48 in. [1220 mm], or up to 54 in. [1370 mm], with a tolerance of $\frac{3}{32}$ in. [3 mm] under the specified width.

5.2.3 *End Squareness*—Corners shall be square with a tolerance of $\pm \frac{1}{8}$ in. [± 3 mm] in the full width of the board.

5.3 Edges:

5.3.1 The edges of gypsum wallboard or laminated gypsum board shall be either square, beveled, featured, tapered, or featured and tapered.



5.3.2 The edges of predecorated gypsum board shall be either square, beveled, or featured.

6. Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board

6.1 *Physical Properties of Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board:*

6.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel to Panel Length, lbf [N]
¼ [6.4]	50 [222]	20 [89]	46 [205]	16 [71]
⅜ [9.5]	80 [356]	30 [133]	77 [343]	26 [116]
½ [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
⅝ [15.9]	140 [622]	50 [222]	137 [609]	46 [205]
¾ [19.0]	170 [756]	60 [267]	167 [743]	56 [249]
1 [25.4]	230 [1023]	80 [356]	228 [1014]	77 [343]

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

Thickness, in. [mm]	Deflection, eighths of an inch [mm]
¼ [6.4]	not required
⅜ [9.5]	15 [48]
½ [12.7]	10 [32]
⅝ [15.9]	5 [16]
¾ [19.0]	not required
1 [25.4]	not required

6.1.3 *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]
¼ [6.4]	40 [178]	36 [160]
⅜ [9.5]	60 [267]	56 [249]
½ [12.7]	80 [356]	77 [343]
⅝ [15.9]	90 [400]	87 [387]
¾ [19.0]	not required	not required
1 [25.4]	not required	not required

6.1.4 *Foil-Backed Gypsum Backing Board, Foil-Backed Gypsum Coreboard, and Foil-Backed Gypsum Shaftliner Board:*

6.1.4.1 Foil-backed gypsum backing board, foil-backed gypsum coreboard, and foil-backed gypsum shaftliner board shall meet all of the requirements for gypsum backing board, gypsum coreboard, and gypsum shaftliner board.

6.1.4.2 When tested in accordance with Test Methods E96/E96M, the permeance of foil-backed gypsum backing board and foil-backed gypsum coreboard shall be not more than 0.30 perm [17 ng/Pa·s·m²] (Desiccant Method) for the condition of 50 % relative humidity on the face of the board, and 0 % relative humidity on the back (foil-covered) side of the board.

6.2 *Dimensions and Tolerances of Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board:*

6.2.1 *Thickness*—The thickness shall be from ¼ to 1 in. [6.4 to 25.4 mm] with tolerances of ± 0.030 in. [± 0.80 mm], and with local variations of ± 0.060 in. [± 1.6 mm].

6.2.2 *Width*—The width shall be from 16 to 48 in. [406 to 1220 mm] with a tolerance of ⅛ in. [3.2 mm] under the specified width.

6.2.3 *End Squareness*—Corners shall be square with a tolerance of ± ⅛ in. [± 3 mm] in the full width of the board.

6.3 *Edges*—The edges shall be either square, beveled, round, V-tongue and groove, or featured.

7. Water-Resistant Gypsum Backing Board

7.1 *Physical Properties of Water-Resistant Gypsum Backing Board:*

7.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel to Panel Length, lbf [N]
½ [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
⅝ [15.9]	150 [667]	50 [222]	147 [654]	46 [205]

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

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

7.1.3 *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]
½ [12.7]	80 [356]	77 [343]
⅝ [15.9]	90 [400]	87 [387]

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

7.2 *Dimensions and Tolerances of Water-Resistant Gypsum Backing Board:*

7.2.1 *Thickness*—The thickness shall be ½ or ⅝ in. [12.7 or 15.9 mm] with tolerances of ± 0.015 in. [± 0.40 mm], and with local variations of ± 0.030 in. [± 0.80 mm].

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

7.2.3 *End Squareness*—Corners shall be square with a tolerance of ± ⅛ in. [± 3 mm] in the full width of the board.

7.3 *Edges*—The edges shall be either square, beveled, featured, tapered, or featured and tapered.

8. Exterior Gypsum Soffit Board

8.1 *Physical Properties of Exterior Gypsum Soffit Board:*

8.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel to Panel Length, lbf [N]
1/2 [12.7]	110 [489]	40 [178]	107 [476]	36 [160]
5/8 [15.9]	150 [667]	50 [222]	147 [654]	46 [205]

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

Thickness, in. [mm]	Deflection, eighths of an inch [mm]
1/2 [12.7]	7 [22]
5/8 [15.9]	4 [13]

8.1.3 *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]
1/2 [12.7]	80 [356]	77 [343]
5/8 [15.9]	90 [400]	87 [387]

8.2 *Dimensions and Tolerances of Exterior Gypsum Soffit Board*:

8.2.1 *Thickness*—The thickness shall be 1/2 or 5/8 in. [12.7 or 15.9 mm] with tolerances of ± 0.015 in. [± 0.40 mm], and with local variations of ± 0.030 in. [± 0.80 mm].

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

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

8.3 *Edges*—The edges shall be either square, beveled, featured, tapered, or featured and tapered.

9. Gypsum Sheathing Board

9.1 *Physical Properties of Gypsum Sheathing Board*:

9.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel 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]

9.1.2 *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]

9.1.3 *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]

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

9.2 *Dimensions and Tolerances of Gypsum Sheathing Board*:

9.2.1 *Thickness*—The thickness shall be from 3/8 to 5/8 in. [9.5 to 15.9 mm] with tolerances of ± 0.030 in. [± 0.80 mm], and with local variations of ± 0.060 in. [± 1.6 mm].

9.2.2 *Width*—The nominal width shall be 24 or 48 in. [610 or 1220 mm] with a tolerance of 1/8 in. [3.2 mm] under the specified width.

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

9.3 *Edges*—The edges shall be either square or V-tongue and groove.

10. Gypsum Base for Veneer Plaster

10.1 *Physical Properties of Gypsum Base for Veneer Plaster*:

10.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel to Panel Length, lbf [N]
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]

10.1.2 *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]
1/2 [12.7]	10 [32]
5/8 [15.9]	5 [16]

10.1.3 *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]
1/2 [12.7]	80 [356]	77 [343]
5/8 [15.9]	90 [400]	87 [387]

10.1.4 *Foil-Backed Gypsum Base for Veneer Plaster*:

10.1.4.1 Foil-backed gypsum base for veneer plaster shall meet all of the requirements for gypsum base for veneer plaster.

10.1.4.2 When tested in accordance with Test Methods E96/E96M, the permeance of foil-backed gypsum base for veneer plaster shall be not more than 0.30 perm [17 ng/Pa·s·m²] (Desiccant Method) for the condition of 50 % relative humidity on the face of the board, and 0 % relative humidity on the back (foil-covered) side of the board.

10.2 *Dimensions and Tolerances of Gypsum Base for Veneer Plaster*:

10.2.1 *Thickness*—The thickness shall be from 3/8 to 5/8 in. [9.5 to 15.9 mm] with tolerances ± 0.015 in. [± 0.40 mm], and with local variations of ± 0.030 in. [± 0.80 mm].



10.2.2 *Width*—The width shall be 48 in. [1220 mm] with a tolerance of $\frac{3}{32}$ in. [3 mm] under the specified width.

10.2.3 *End Squareness*—Corners shall be square with a tolerance of $\pm \frac{1}{8}$ in. [± 3 mm] in the full width of the board.

10.3 *Edges*—The edges shall be either square, beveled, featured, tapered, or featured and tapered.

11. Gypsum Lath

11.1 *Physical Properties of Gypsum Lath:*

11.1.1 *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 Bearing Edges Perpendicular to Panel Length, lbf [N]	Method A Bearing Edges Parallel to Panel Length, lbf [N]	Method B Bearing Edges Perpendicular to Panel Length, lbf [N]	Method B Bearing Edges Parallel to Panel Length, lbf [N]
$\frac{3}{8}$ [9.5]	60 [267]	25 [111]	56 [249]	21 [93]
$\frac{1}{2}$ [12.7]	100 [445]	35 [156]	97 [431]	31 [138]

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

Thickness, in. [mm]	Deflection, eighths of an inch [m]
$\frac{3}{8}$ [9.5]	15 [48]
$\frac{1}{2}$ [12.7]	10 [32]

11.1.3 *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]
$\frac{3}{8}$ [9.5]	50 [222]	46 [205]
$\frac{1}{2}$ [12.7]	70 [312]	66 [294]

11.1.4 *Foil-Backed Gypsum Lath:*

11.1.4.1 Foil-backed gypsum lath shall meet all of the requirements for gypsum lath.

11.1.4.2 When tested in accordance with Test Methods E96/E96M, the permeance of foil-backed gypsum lath shall be not more than 0.30 perm [17 ng/Pa·s·m²] (Desiccant Method) for the condition of 50 % relative humidity on the face of the board, and 0 % relative humidity on the back (foil-covered) side of the board.

11.2 *Dimensions and Tolerances of Gypsum Lath:*

11.2.1 *Thickness*—The thickness shall be $\frac{3}{8}$ or $\frac{1}{2}$ in. [9.5 or 12.7 mm] with tolerances of ± 0.030 in. [± 0.80 mm], and with local variations of ± 0.060 in. [± 1.6 mm].

11.2.2 *Width*—The nominal width shall be up to 48 in. [1220 mm] with a tolerance of $\frac{3}{16}$ in. [4.8 mm] under and $\frac{1}{8}$ in. [3.2 mm] over the specified width.

11.2.3 *End Squareness*—Corners shall be square with a tolerance of $\pm \frac{1}{4}$ in. [± 6.4 mm] in the full width of the board.

11.3 *Edges*—The edges shall be either round or square.

12. Gypsum Ceiling Board

12.1 *Physical Properties of Gypsum Ceiling Board:*

12.1.1 *Flexural Strength*—The specimens shall be tested face up and face down. The average breaking load shall not be 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]

12.1.2 *Humidified Deflection*—The specimens shall have an average humidified deflection of not more than $\frac{5}{16}$ in. [8 mm].

12.1.3 *Nail Pull Resistance*—The specimens shall have an average nail-pull resistance of not less than 80 lbf [356 N] when tested by Method A and 77 lbf [343 N] when tested by Method B.

12.2 *Dimensions and Tolerances of Gypsum Ceiling Board:*

12.2.1 *Thickness*—The thickness shall be $\frac{1}{2}$ in. [12.7 mm] with tolerances of ± 0.015 in. [± 0.40 mm] with local variations of ± 0.030 in. [± 0.80 mm].

12.2.2 *Width*—The width shall be up to 48 in. [1220 mm] with a tolerance of $\frac{3}{32}$ in. [3 mm] under the specified width.

12.2.3 *End Squareness*—Corners shall be square with a tolerance of $\pm \frac{1}{8}$ in. [3 mm] in the full width of the board.

12.3 *Edges*—The edges shall be either square, beveled, featured, tapered, or featured and tapered.

13. Finish and Appearance

13.1 Gypsum board, except for predecorated gypsum board, is intended to be a substrate. The surfaces of gypsum board shall be true and free from imperfections that would render it unfit for finishing and final decoration. Gypsum board shall be installed and finished to the specified level in accordance with Specification C840.

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

14.1 Sampling, inspection, rejection, certification, packaging, marking, shipping, handling, and storage of gypsum board shall be in accordance with Specification C1264.

15. Keywords

15.1 ceiling; coreboard; drywall; exterior gypsum soffit board; foil-backed; gypsum; gypsum backing board; gypsum base; gypsum board; gypsum ceiling board; gypsum coreboard; gypsum lath; gypsum sheathing; gypsum sheathing board; gypsum wallboard; laminated gypsum board; partitions; plaster; predecorated gypsum board; shaftliner; sheathing; type X; veneer base; veneer plaster; wall; wallboard; water-resistant gypsum board



APPENDIXES

(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 4.4.1 – 4.4.3 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 products. 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 board, type X (special fire-resistant) designates gypsum board, except gypsum lath, providing a greater fire-resistance than regular gypsum board of the same thickness. Type X (special fire-resistant) gypsum board, when tested in accordance with Test Methods E119, shall provide the following minimum fire resistance ratings 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 35/8-in. [92-mm] deep non-loadbearing galvanized steel studs complying with Specification C645, spaced 24 in. [610 mm] on center. The 5/8-in. [15.9-mm] thick gypsum 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, 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 21/2-in. [64-mm] deep non-loadbearing galvanized steel studs complying with Specification C645, 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 15/8-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.

X2. TABLE OF WITHDRAWN ASTM STANDARDS REPLACED BY SPECIFICATION C1396/C1396M

X2.1 As of December 1, 2004, a single ASTM International reference, Specification C1396/C1396M, has replaced nine standards previously used to designate specific gypsum boards employed in commercial and residential construction. The chart below identifies the withdrawn standard and its corresponding section within Specification C1396/C1396M.

Withdrawn ASTM Standard		C1396/C1396M Section
C36/C 36/M	Specification for Gypsum Wallboard	5
C37/C37M	Specification for Gypsum Lath	11
C79/C79M	Specification for Gypsum Sheathing Board	9
C442/C442M	Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board	6
C588/C588M	Specification for Gypsum Base for Veneer Plasters	10
C630/C630M	Specification for Water-Resistant Gypsum Backing Board	7
C931/C931M	Specification for Exterior Gypsum Soffit Board	8
C960/C960M	Specification for Predecorated Gypsum Board	5
C1395/C1395M	Specification for Gypsum Ceiling Board	12

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this standard since the last issue (C1396/C1396M – 14a) that may impact the use of this standard. (Approved July 1, 2017.)

(1) Added **4.6.6 – 4.6.6.**

(3) Added **Note 4.**

(2) Revised **4.7.1.**

Committee C11 has identified the location of selected changes to this specification since the last issue, C1396/C1396M – 14, that may impact the use of this specification. (Approved Oct. 1, 2014.)

(1) Added Section **4.7** and Subsection **4.7.1.**

(2) Added Test Methods **C471M** to Section **2.**

Committee C11 has identified the location of selected changes to this specification since the last issue, C1396/C1396M – 13, that may impact the use of this specification. (Approved Feb. 1, 2014.)

(1) Revised Subsection **13.1.**

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