



Standard Specification for Gypsum Board¹

This standard is issued under the fixed designation C 1396 / C 1396M; 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 (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope

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

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 and coreboard*, designed for use as a base in multilayer systems or as a gypsum stud or core in semisolid or solid gypsum board partitions.

NOTE 1—The terms backing board and coreboard refer to different end uses. The term gypsum backing board, as used in this specification shall include gypsum coreboard 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.

1.2 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	5
Gypsum backing board, gypsum coreboard	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 inch-pound units or SI (metric) 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.

2. Referenced Documents

2.1 ASTM Standards:

C 11 Terminology Relating to Gypsum and Related Building Materials and Systems²

C 473 Test Methods for Physical Testing of Gypsum Panel Products²

C 645 Specification for Nonstructural Steel Framing Members²

C 1264/C 1264M Specification for Sampling, Inspection, Rejection, Certification, Packaging, Marking, Shipping, Handling, and Storage of Gypsum Board²

E 84 Test Method for Surface Burning Characteristics of Building Materials³

E 96 Test Methods for Water Vapor Transmission of Materials⁴

E 119 Test Methods for Fire Tests of Building Construction and Materials³

3. Terminology

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

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]

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 Nov. 10, 2000. Published November 2000. Originally published as C 1396/C 1396M – 98. Last previous edition C 1396/C 1396M – 99^{ε1}.

² Annual Book of ASTM Standards, Vol 04.01.

³ Annual Book of ASTM Standards, Vol 04.07.

⁴ Annual Book of ASTM Standards, Vol 04.06.

gypsum board used as a gypsum stud or core in semisolid or solid gypsum board partitions.

4. Materials and Manufacture

4.1 Gypsum board shall consist of a noncombustible core, essentially gypsum, surfaced with paper bonded to the core.

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

4.1.1.1 Water-resistant core (core treated) gypsum sheathing board shall have a water-resistant material incorporated in 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, essentially gypsum, 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, essentially gypsum, 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.

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

4.3 Gypsum Board, Type X (Special Fire-Resistant):

4.3.1 Gypsum Board, Type X, designated gypsum board, except gypsum lath, complying with this specification that provides not less than 1 h fire-resistance for boards 5/8 in. [15.9 mm] thick or 3/4 h fire-resistance 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 centers with 6d coated nails, 1 7/8 in. [48 mm] long, 0.0915-in. [2.3-mm] diameter shank, 1/4-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 E 119.

4.3.2 Gypsum Lath, type X designates gypsum lath complying with this specification that provides not less than a 1-h fire-resistance classification for gypsum lath 3/8 in. [9.5 mm] thick, when applied at right angles to and on each side of loadbearing 2 x 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 1/2 in. [12.7 mm] 1:2 gypsum sand plaster and tested in accordance with the requirements of Test Method E 119.

NOTE 2—The definitions for type X given in 4.3.1 and 4.3.2 are intended only as a test to define the gypsum board as meeting the requirements for type X. These tests are neither intended to indicate a preferred application nor to limit the use of the product in other fire-resistance rated assemblies.

NOTE 3—Consult producers 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.

4.4 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 E 84.

4.5 Physical Properties, Dimensions, and Permissible Variations of Gypsum Board:

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

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

4.5.2 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.

4.5.3 Edges and Ends—The edges and ends of gypsum board shall be straight and solid.

4.5.4 Length—The permissible variation in length shall be ± 1/4 in. [± 6 mm].

4.5.5 Tapered Edge Depth—The average thickness of the edge of recessed or tapered edge gypsum board shall be not less than 0.020 in. [0.38 mm] but not more than 0.090 in. [1.90 mm] less than the average thickness of the gypsum board.

5. Gypsum Wallboard and Predecorated Gypsum Board

5.1 Physical Properties of Gypsum Wallboard and Predecorated 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	Method A	Method B	Method B
	Bearing Edges Perpendicular to Panel Length, lbf [N]	Bearing Edges Parallel to Panel Length, lbf [N]	Bearing Edges Perpendicular to Panel Length, lbf [N]	Bearing Edges Parallel to Panel Length, lbf [N]
1/4 [6.4]	50 [222]	20 [89]	46 [205]	16 [71]
5/16 [7.9]	65 [289]	25 [111]	62 [276]	21 [93]
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]
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]
1/4 [6.4]	not applicable
5/16 [7.9]	not applicable
3/8 [9.5]	15 [48]
1/2 [12.7]	10 [32]
5/8 [15.9]	5 [16]
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]
1/4 [6.4]	40 [178]	36 [160]
5/16 [7.9]	50 [222]	46 [205]
3/8 [9.5]	60 [267]	56 [249]
1/2 [12.7]	80 [356]	77 [343]
5/8 [15.9]	90 [400]	87 [387]
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 E 96, the permeance of foil-backed gypsum wallboard and foil-backed predecorated gypsum board 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.

5.2 *Dimensions and Permissible Variations of Gypsum Wallboard and Predecorated Gypsum Board:*

5.2.1 *Thickness*—The nominal thickness shall be from ¼ to ¾ in. [6.4 to 19.0 mm] with permissible variations in the thickness of ± ¼ in. [±0.4 mm], and with permissible local variations of ± 1/32 in. [±0.8 mm].

5.2.2 *Width*—The width shall be up to 48 in. [1220 mm], with widths up to 54 in. [1370 mm] permitted, with a permissible variation of 3/32 in. [3 mm] under the specified width.

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

5.3 *Edges:*

5.3.1 Edges of gypsum wallboard shall be either square, recessed, beveled, featured, tapered, or featured and tapered.

5.3.2 Edges of predecorated gypsum board shall be either square or featured.

6. **Gypsum Backing Board and Gypsum Coreboard**

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

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		Method B	
	Bearing Edges Perpendicular to Panel Length, lbf [N]	Bearing Edges Parallel to Panel Length, lbf [N]	Bearing Edges Perpendicular to Panel Length, lbf [N]	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 applicable
⅜ [9.5]	15 [48]
½ [12.7]	10 [32]
⅝ [15.9]	5 [16]
¾ [19.0]	not applicable
1 [25.4]	not applicable

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

Thickness,	Method A,	Method B,
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in. [mm]	lbf [N]	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 and Foil-Backed Gypsum Coreboard:*

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

6.1.4.2 When tested in accordance with Test Methods E 96, 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 Permissible Variations of Gypsum Backing Board and Gypsum Coreboard:*

6.2.1 *Thickness*—The nominal thickness shall be from ¼ to 1 in. [6.4 to 25.4 mm] with permissible variations in the thickness of ± 1/32 in. [±0.8 mm], and with permissible local variations of ± 1/16 in. [±1.6 mm].

6.2.2 *Width*—The width shall be from 16 to 48 in. [406 to 1220 mm] with a permissible variation of 1/8 in. [3.2 mm] under the specified width.

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

6.3 *Edges*—Edges shall be either square, 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		Method B	
	Bearing Edges Perpendicular to Panel Length, lbf [N]	Bearing Edges Parallel to Panel Length, lbf [N]	Bearing Edges Perpendicular to Panel Length, lbf [N]	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]