



Designation: C844 – 15 (Reapproved 2021)

Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster¹

This standard is issued under the fixed designation C844; 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 U.S. Department of Defense.

1. Scope

1.1 This specification covers the minimum requirements for, and methods of, application of gypsum veneer base for gypsum veneer plasters.

1.2 Gypsum veneer base shall not be used as a base for direct adhesive application of ceramic, metal, or plastic tile in areas exposed to abnormal moisture or humidity or temperature.

1.3 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

1.4 Where a specific degree of sound control is required for veneer plaster assemblies and constructions, details of construction shall be in accordance with official reports of tests conducted in recognized sound testing laboratories in accordance with the applicable sound tests, Test Methods C423, E90, or E492.

1.5 Where this specification is more stringent (size or thickness of framing; spacing of fasteners) than the fire-rated construction, this specification shall govern; otherwise, the construction described in the fire test report shall govern.

1.6 Unheated spaces above gypsum veneer base ceilings shall be properly ventilated (see Appendix X3).

1.7 The values stated in inch-pound units are to be regarded as the standard. The SI (metric) values given in parentheses are approximate and are provided for information purposes only.

1.8 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.

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 C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

Current edition approved June 1, 2021. Published July 2021. Originally approved in 1978. Last previous edition approved in 2015 as C844 – 15. DOI: 10.1520/C0844-15R21.

1.9 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
- C423 Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- C514 Specification for Nails for the Application of Gypsum Board
- C587 Specification for Gypsum Veneer Plaster
- C754 Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
- C954 Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
- C955 Specification for Cold-Formed Steel Structural Framing Members
- C1002 Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
- C1007 Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories
- C1047 Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
- C1396/C1396M Specification for Gypsum Board
- C1546 Guide for Installation of Gypsum Products in Concealed Radiant Ceiling Heating Systems
- E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

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.

E492 Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

2.2 *American Softwood Lumber Standard*:³

PS 20 American Softwood Lumber Standard

3. Terminology

3.1 Definitions:

3.1.1 Definitions shall be in accordance with Terminology **C11**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *base ply, n*—first ply of gypsum base in multiple ply application.

3.2.2 *face ply, n*—outer or visible layer of gypsum base in multiple ply application.

3.2.3 *fastener, n*—nails, screws, or staples used for the application of the gypsum base or backing board.

3.2.4 *framing member, n*—that portion of the framing, furring, blocking, and so forth, to which the gypsum base is attached. Unless otherwise specified, the surface to which abutting edges or ends are attached shall be not less than 1½ in. (38 mm) wide for wood members, not less than 1¼ in. (32 mm) wide for steel members, and not less than 6 in. (152 mm) wide for gypsum studs. For internal corners or angles, the bearing surface shall be not less than ¾ in. (19 mm).

3.2.5 *parallel application, n*—gypsum base application where the gypsum base edge is applied parallel to the framing members.

3.2.6 *perpendicular application, n*—gypsum base application where the gypsum base edge is applied at right angles to the framing members.

4. Materials

4.1 Materials shall conform to the respective specifications and standards and to the requirements specified herein.

4.2 *Gypsum Base for Veneer Plasters* (hereinafter referred to as “gypsum base”)—Specification **C1396/C1396M**.

4.3 *Gypsum Backing Board*—Specification **C1396/C1396M**.

4.4 *Special Fire-Retardant Gypsum Base*—Specification **C1396/C1396M**, Type X.

4.5 *Foil-Backed Gypsum Base*—Specification **C1396/C1396M**.

4.6 *Gypsum Veneer Plaster*—Specification **C587**.

4.7 *Nails*—Specification **C514**.

4.8 *Screws*:

4.8.1 *Non-load Bearing Steel*—Specification **C1002**.

4.8.2 *Load Bearing Steel*—Specification **C954**.

4.9 *Staples*—No. 16 USS gauge 0.063-in. (1.6 mm) flattened galvanized wire with ⅞-in. (11.1 mm) wide-crown

minimum outside measure and divergent points. Staples shall be used only for the base ply of two-ply application over wood framing.

4.10 *Steel Framing, Non-load Bearing*—Specification **C645** for the specified design criteria.

4.11 *Accessories*—Specification **C1047**.

4.12 *Adhesive*—For application of gypsum base to steel framing, the adhesive shall be as recommended by the manufacturer of the gypsum base.

4.13 *Steel Framing Load Bearing*—Specification **C955**.

4.14 *Wood Framing*—American Lumber Softwood Standard **PS-20**.

5. Delivery of Materials

5.1 All materials shall be delivered in the original packages, containers, or bundles bearing the brand name and manufacturer (or supplier) identification.

6. Shipping, Handling and Storage

6.1 Gypsum board shall be shipped so as to be kept dry.

6.2 Gypsum board shall be stored so as to be kept dry, preferably inside a building, under a roof. Gypsum board shall be neatly stacked flat with care taken to prevent sagging or damage to edges, ends, and surfaces.

6.3 Where necessary to store gypsum board outside, it shall be stacked flat, off the ground, supported on a level platform, and fully protected from weather and direct sunlight exposure.

6.4 Prior to application, the building exterior shall be so enclosed to protect the gypsum base from exposure to weather and direct sunlight.

NOTE 1—The bond of alkaline veneer plaster to gypsum base will be impaired if the base is exposed to direct light or sunlight for extended periods.

7. Environmental Conditions

7.1 *Application of Gypsum Base and Adhesives*—A room temperature of not less than 40 °F (4 °C) shall be maintained during application of gypsum base except when adhesive is used for the attachment of gypsum base. For the bonding of adhesive, a room temperature of not less than 50 °F (10 °C) shall be maintained for 48 h prior to application and continuously thereafter until adhesive is completely dry. When a temporary heat source is used, the temperature shall not exceed 95 °F (35 °C) in any room or area. Adequate ventilation shall be maintained in the working area during the application and adhesive curing process.

8. Application of Gypsum Base

8.1 General Requirements:

8.1.1 Installation of steel framing shall be in accordance with applicable Specifications **C754** or **C1007** except where superseded by requirements of **Table 1**.

NOTE 2—For general wood framing requirements, see **Appendix X2**.

8.1.2 *Method of Cutting*—The gypsum base shall be cut by scoring and breaking or by sawing, working from the face side.

³ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.

TABLE 1 Maximum Framing Spacing

Single-ply Base (Thickness), in. (mm)	Application to Framing	Maximum On Center Spacing of Framing, in. (mm)
Ceilings:		
1/2 (12.7)	parallel	16 (406)
1/2 (12.7) ^A	perpendicular	24 (610)
5/8 (15.9) ^B	perpendicular	24 (610)
Sidewalls:		
3/8 (9.5) ^C	perpendicular	16 (406)
1/2 (12.7)	parallel	16 (406)
1/2 (12.7) ^A	perpendicular	24 (610)
5/8 (15.9) ^B	parallel or perpendicular	24 (610)

^A 1/2-in. (12.7 mm) gypsum base applied perpendicular on 24-in. (610 mm) on centers framing shall be considered to be minimum construction.

^B For 5/8-in. (15.9 mm) base, perpendicular on ceilings and either perpendicular or parallel on sidewalls at 24-in. (610 mm) on centers spacing, only two-component veneer plaster or special joint reinforcement, as recommended by the gypsum veneer plaster manufacturer, shall be used.

^C 3/8-in. (9.5 mm) gypsum base shall be used over wood framing with two-component veneer plaster systems only.

When cutting by scoring, the face shall be cut with a knife or other suitable tool and the gypsum base snapped back away from the cut face. The back shall be broken by snapping the gypsum base in the reverse direction, or by cutting with a knife or other suitable tool.

8.1.3 All cut edges and ends of the gypsum base shall be smoothed to obtain neat jointing. Cut-outs for pipes, fixtures, or other small openings on the face and back of the base shall be scribed in outline before removing or cut out with a saw or other suitable tool. The gypsum base shall be scribed where it meets projecting surfaces. Base shall be brought lightly into contact with adjacent panels but not forced into place. Abutting ends and edges shall fit neatly.

8.1.4 When gypsum base is to be applied to both ceiling and walls, the base shall be applied to the ceiling and then to the walls.

8.2 Fastening, Mechanical:

8.2.1 The gypsum base shall be held in firm contact with the underlying support while driving any fastener.

8.2.2 Fastener application shall proceed from the center of the field of the gypsum base to the ends and edges or shall begin along one edge and proceed toward the other edge.

8.2.3 Except where required for fire rating, structural performance, or other special considerations, fastening to top or bottom plates shall not be required.

8.2.4 Fasteners shall be spaced not less than 3/8 in. (9.5 mm) from the edges and ends of the gypsum base. Fasteners used at edges or at base ends in horizontal application shall not be more than 1 in. from edges or ends.

8.2.5 Nails and screws shall be driven to a point flush with the gypsum base surface without breaking the surface paper or damaging the surrounding gypsum core and without stripping the framing member around the screws.

8.2.6 Staples shall be driven so that both legs penetrate the support member and the crown bears tightly against the backing board, but does not cut into the face paper. The staple shall be driven with the crown parallel to framing members. Staples shall be used only for the first ply in two-ply gypsum base systems.

8.2.7 Penetration of mechanical fasteners into supporting framing members shall be not less than:

	Nails	Screws	Staples
Wood:	7/8 in. (22 mm)	5/8 in. (15 mm)	5/8 in. (15 mm), each leg
Steel:	...	3/8 in. (9 mm)	...

8.3 Control Joints:

8.3.1 Control joints shall be installed in ceilings more than 2500 ft² (232 m²) in area that are constructed with perimeter relief. The distance between control joints shall be not more than 50 ft (15 m) in either direction.

8.3.2 Ceilings of more than 900 ft² (85 m²) in area constructed without perimeter relief shall have control joints installed with spacing not to exceed 30 ft (9 m) in either direction.

8.3.3 Control joints shall be installed where ceiling framing or furring changes direction or where construction joints occur in the base building construction. In partitions, walls, or wall furring, the distance between control joints shall be not more than 30 ft (9 m).

8.3.4 A ceiling height door frame, installed in accordance with the spacing requirements set forth in 8.3, functions as a control joint.

9. Application of Single-ply Gypsum Base

9.1 The maximum spacing of framing members for single-ply gypsum base construction shall be not more than those shown in Table 1.

9.2 In single-ply installation, all ends and edges of gypsum base shall occur over framing members or other solid backing except where treated joints occur at right angles to framing or furring members.

9.3 Joints on opposite sides of a partition shall be arranged to occur on different framing members.

9.4 Fasteners (Single-ply Application):

9.4.1 *Nail Spacing*—Space nails a maximum of 7 in. (178 mm) on centers on the ceiling and a maximum of 8 in. (203 mm) on centers on the walls.