

Application of Gypsum Panel Products

Gypsum panel products is the general name for a family of sheet products consisting essentially of gypsum.ⁱ The definition effectively covers any gypsum board or gypsum panel product that has a predominantly gypsum base including, but not limited to:

- All gypsum boards, including wallboard, liner panel, veneer base, ceiling board, and soffit board
- Abuse- and impact-resistant products and water-resistant and mold-resistant products, both paper and glass mat-faced
- Gypsum sheathing products, both paper and glass mat-faced
- Special-use products, such as laminated or predecorated products, gypsum-based tile-backing boards including glass mat-faced products, and sound-dampening products

With noted exceptions and clarifications, the information herein applies to all gypsum panel product applications. The information may be modified by a model code or jurisdictional requirement, or a fire, sound, smoke, structural use, or similar test report or listing.

Application Fundamentals

In general, the application and finishing of gypsum panel products is regulated by two industry standards:

- *ASTM C840 – Standard Specification for Application and Finishing of Gypsum Panel Products*ⁱⁱ
- *GA-216 – Application and Finishing of Gypsum Panel Products*ⁱⁱⁱ

While it is not a standard, *GA-214, Recommended Levels of Finish – Gypsum Board, Glass Mat & Fiber-Reinforced Gypsum Panels*, should also be consulted.^{iv}

Some panel products have separate application standards, for example:

- Exterior gypsum panel products for use as sheathing – ASTM C1280^v or GA-253^{vi}
- Gypsum lath – ASTM C841^{vii}
- Veneer base for gypsum plaster – ASTM C844^{viii}

Additional materials that should be consulted prior to beginning panel application include, but are not limited to:

- Manufacturer's literature, including technical manuals and product handbooks.
- *The Interior Guide* (Published by WCC)^x
- Model or local building codes such as the *International Building Code*^x
- Third-party product listings and evaluation reports
- Items published by the organizations listed at the end of this document

Environmental Conditions

General environmental conditions for the application of gypsum panel products are included in ASTM C840 and GA-216.

Gypsum panels should never be exposed to a sustained temperature of more than 125°F (52°C) for an extended period of time or a wet environment, water, or a continuous high-humidity environment. Prior to, during, and subsequent to installation, gypsum panels must be protected from direct exposure to rain, snow, sunlight, or other excessive weather conditions.

ASTM C840 and GA-216 establish minimum work area temperature requirements. In addition, Gypsum Association document GA-236 addresses the drying time of joint compound as it is impacted by temperature and relative humidity conditions.^{xi}

WCC Comments on Environmental Conditions

ASTM C840 and GA-216 mandate that “for the bonding of adhesive, joint treatment, texturing, and decoration, the room temperature shall be maintained at not less than 50°F for 48 hours prior to application and continuously thereafter until completely dry.”^{xii} It is the recommendation of the WCC that a minimum temperature of 50°F be continuously maintained within the workspace until the permanent heating system is operational or the space is occupied.

Tested Systems and Assemblies

Tested systems and assemblies are typically installed to resist the passage of fire, heat, or smoke; to attenuate sound or impact-noise transmission; to provide a measure of structural or seismic reinforcement; or to satisfy a similar critical building environment requirement.

WCC Comments on Tested Systems and Assemblies

- Install fasteners in strict compliance with the documentation, noting that tested assemblies often require the use of specific fasteners and incorporate defined fastener spacing requirements.
- Install all system components as described in the documentation for the tested system. Orient and install the panels as described in the documentation.
- Use the materials described in the test description.

Levels of Finish

GA-214 was first published in the early 1990s and was “intended to assist specification writers, architects, contractors, and building owners...(to) precisely describe...the finishing requirements for wall and ceilings prior to the application of paints and other decorative finishes.”^{xiii}

While the information in the master version of GA-214 is controlled by five organizations, including the Gypsum Association - which also manages the content process and publishes the text for the consortium - the document itself is not a consensus standard. As a result, the basic concepts that support the Levels of Finish have occasionally been modified and incorporated into documents published by a variety of organizations. The text also has been translated into numerous different languages and re-published by organizations in Europe and Asia.

WCC Comments on Level of Finish

Given the variations in content between different versions of the Levels of Finish, the WCC recommends the use of the GA-214 version that is available from the Gypsum Association (or another member of the working consortium) or the language that has been incorporated in the ASTM C840 standard, modified as noted:

- GA-214 mandates a jobsite mock-up for level 3, 4, and 5 finishes; ASTM C840 does not contain the same requirement. It is the position of the WCC that to verify that the project specifications, workmanship, and level of finish are appropriate for specific locations within the structure, creating a jobsite mock-up is *recommended but not required*. A design professional should identify and specify the need for the mock-up, establish reasonable dimensions for construction of the mock-up, and determine an appropriate location for construction.

Once completed, the mock-up is to be accepted by all involved parties - including, but not limited to, the design professional, owner, involved contractors, and other relevant parties - prior to the beginning of any finish work. To evaluate the mock-up and other finished surfaces within the project, refer to WCC Technical Bulletin 3.002, *Evaluating Treated Interior Gypsum Panel Surfaces*.^{xiv}

- With a level 3, 4 or 5 finish, if the treated surface is to be textured, a pre-texture primer should be applied to the prepared surface by the trade responsible for applying the texture. In all instances, a primer must be applied to the textured or treated gypsum panel product surface prior to final decoration by the trade responsible for final decoration. The selected final decoration will determine the type of primer to be applied.

Control Joints in Gypsum Panel Systems

Control joints are typically installed to mitigate the effects of minor environmental fluctuations in thermal or hygroscopic (humidity) conditions.

The typical control joint used with gypsum panels is a one-piece trim accessory, commonly referred to as an “093” control joint. Two independent trim accessories – installed parallel with the void between filled with sealant – can function as a control joint. A building construction joint, also known as an expansion joint, can function as a control joint if it is installed in compliance with defined spacing requirements.

The requirements for control joint installation are defined in ASTM C840 and GA-216. In fire-, sound-, or smoke-rated assemblies, control joints must be installed in compliance with the appropriate system or product test. Examples may be found in resources such as the “Strain Relief Systems” section of Gypsum Association document, *GA-600, Fire Resistance and Sound Control Design Manual*.^{xv}

WCC Comments on Control Joints

While ASTM C 840 and GA-216 specifically state where control joints should be placed, it is the responsibility of the design professional to specify and identify the locations of control joints on the project construction drawings. Provided the necessary information is explicit in both the specifications and drawings, the contractor is responsible to install the control joints as indicated.

Information Resources and Identified Source Materials

Consult the endnotes to this document for information on obtaining any of the documents referenced herein. Specific information sources include:

- ASTM International
- Gypsum Association
- Wall and Ceiling Conference and the bureaus that support the WCC

ⁱ ASTM International C11-18, *Standard Terminology Relating to Gypsum and Related Building Materials and Systems*, West Conshohocken, PA; ASTM International, 2018, www.astm.org

ⁱⁱ ASTM International C840-19, *Standard Specification for Application and Finishing of Gypsum Panel Products*, West Conshohocken, PA; ASTM International, 2019, www.astm.org

ⁱⁱⁱ GA-216-2016, *Application and Finishing of Gypsum Panel Products*, Gypsum Association, Silver Spring, MD, 2016, www.gypsum.org

- iv GA-214-2015, *Recommended Levels of Finish – Gypsum Board, Glass Mat & Fiber-Reinforced Gypsum Panels*, Gypsum Association, Silver Spring, MD, 2015, www.gypsum.org
- v ASTM International C1280-18, *Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing*, West Conshohocken, PA, ASTM International, 2018, www.astm.org
- vi GA-253-2018, *Application of Gypsum Sheathing*, Gypsum Association, Silver Spring, MD, 2018, www.gypsum.org
- vii ASTM International C841-18, *Standard Specification for Installation of Interior Lathing and Furring*, West Conshohocken, PA; ASTM International, 2018, www.astm.org
- viii ASTM International C844-15, *Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster*, West Conshohocken, PA, ASTM International, 2015, www.astm.org
- ix *The Interior Guide*, Wall and Ceiling Conference, 2015, www.wccinfo.org
- x *2018 International Building Code*, International Code Council, Country Club Hills, IL, 2017, www.iccsafe.org
- xi GA-236-2017, *Joint Treatment Under Extreme Weather Conditions*, Gypsum Association, Silver Spring, MD, 2017, www.gypsum.org
- xii ASTM Standard C840
- xiii GA-214-2015
- xiv Document 3.002, *Evaluating Treated Interior Gypsum Panel Surfaces*, Wall and Ceiling Conference, 2019, www.wccinfo.org
- xv GA-600-2018, *Fire Resistance and Sound Control Design Manual*, Gypsum Association, Silver Spring, MD 2018, www.gypsum.org