

## **The Finishing & Decorating of Interior Gypsum Panel Surfaces**

This document is intended to assist design professionals, contractors, and building owners to more precisely describe in project documents the finishing requirements for walls and ceilings prior to the application of paints and other decorative finishes.

As part of the gypsum panel finishing process, the abutting gypsum panel seams/joints, fasteners, and accessories must be finished/covered with joint compound. The gypsum panel finishing process occurs above the plane of the gypsum panels. It must be noted that it is not possible to achieve a perfectly flat surface when finishing gypsum panels. Achieving proper concealment involves finishing the joints and fasteners with successive thin layers of joint compound to minimize recesses or ridges that would otherwise remain visible.

Determining the appropriate level of finish over interior walls and ceilings is dependent on several factors. Normally, considerations include the specific type of gypsum panel product, its location within the structure, the critical lighting conditions present, surface smoothness desired, and the color, type and sheen/gloss of the decorative finish required.

Once all the factors have been evaluated, documents can be written in specific terms, enabling all contractual and interested parties to understand the expectations of a particular project.

This document is presented by the Association of the Wall and Ceiling Industry (AWCI), Ceilings & Interior Systems Construction Association (CISCA), Drywall Finishing Council, Inc. (DWFC), Gypsum Association (GA), and the Painting Contractors Association (PCA). Incorporating the appropriate sections of these recommendations into the project documents will enable the architect, general contractor, and building owner to agree upon the final appearance. Where mock-ups are required, consideration should be given to enable the mock-ups to remain as a part of the permanent structure.

## Recommendations

### I. SCOPE

These recommendations describe various levels for finishing gypsum board, glass mat and fiber reinforced gypsum panel surfaces prior to the application of final decoration. The scope of use determines the level of finish and the finishing steps required. The scope of use provided within each level of finish should guide the specification process.

### II. TERMINOLOGY

The following definitions are applicable to this document.

**Accessories**—Control joints, corner reinforcement trim, or molding used to protect or conceal corners, edges, wall terminations, or abutments of the gypsum panel.

**Critical Lighting**—Strong side lighting from windows or surface-mounted light fixtures. *syn* severe lighting. See “Comments” section of this document.

**Primer**—A material specifically formulated for the intended final finish application to be applied over the entire prepared gypsum panel surface prior to decoration. See “Comments” section of this document.

**Fiber-Reinforced Gypsum Panels**—A generic name for a family of sheet products consisting essentially of gypsum with fibers dispersed throughout.

**Flat Paint**—A paint material specifically manufactured to produce 0 to 5 Gloss Units (GU) at a 60° angle and 0 to 10 Gloss Units (GU) at an 85° angle when measured using a gloss meter.

**Glass Mat Gypsum Panels**—A generic name for a family of sheet products consisting of a noncombustible core of essentially gypsum surfaced with glass mat partially or completely embedded in the core.

**Gypsum Board**—The generic name for a family of sheet products consisting of a noncombustible core primarily of gypsum with paper surfacing.

**Gypsum Panel Products**—The general name for a family of sheet products consisting essentially of gypsum.

**Joint Photographing**—The shadowing of the finished joint areas through the surface decoration. *syn* telegraphing.

**Non-Flat Paint**—A paint material specifically manufactured to produce greater than 5 Gloss Units (GU) at a 60° angle and greater than 10 Gloss Units (GU) at an 85° angle when measured using a gloss meter.

**Primer**—A material specifically formulated for the intended final finish application to be applied over the entire prepared gypsum panel surface prior to decoration. See “Comments” section of this document.

**Skim Coat**—Either a thin coat of joint compound applied at a trowel consistency or a material manufactured specifically for this purpose, applied in accordance with manufacturer’s recommendations over the entire surface. For further discussion of trowel consistency and skim coating operation, see “Comments” section of this document.

**Spotting**—To cover fastener heads with joint compound.

**Texture**—A decorative treatment applied to gypsum panel surfaces.

NOTE: A “non-continuous texture” is a pattern where a portion of the panel surface remains exposed after application.

**Tool Marks**—Imperfections left in joint compound from the use of drywall finishing tools.

**Wallcovering**—A flexible sheet of sized paper, fabric, plastic, etc., usually laminated and printed with a pattern intended to be pasted to a wall as decoration.

### **III. JOBSITE MOCK-UPS**

The design professional shall specify the procedure and construction details of the mock-ups within the project documents. When specified, a jobsite mock-up shall serve as a benchmark for the purpose of acceptance of the related widespread work for all appearance areas finished to a Level 3, 4, or 5 as described in this document in section IV, LEVELS OF FINISH. See “Comments” section of this document for inspection criteria.

When specified, a mock-up:

1. Shall be of sufficient size to represent the requirements found in the specified Level of Finish.
2. Shall be in the designated location as agreed upon by all interested parties.
3. Shall include the finish decoration prior to inspection. This includes texture and other decorative finishes such as final paint, wallcovering, trim, or other wall treatment.
4. Shall simulate lighting conditions representative of those present when the building is occupied (natural and artificial).

A completed mock-up will be the visual project standard that will enable the design professional, contractors and building owners to agree upon the final appearance prior to beginning any widespread finish work. See “Comments” section of this document.

### **IV. LEVELS OF FINISH**

The following levels of finish are applicable when finishing gypsum panel products. The levels of finish are established as a guide prior to final decoration. The minimum requirements and scope of use for each independent level of finish shall be as described.

All gypsum panel products shall be applied and prepared in accordance with GA-216 *Application and Finishing of Gypsum Panel Products*.

It is recommended that the final decoration specification (e.g. painting specification) include the application of a priming material prior to the decoration where required by the specified level of finish. Special care should be taken to protect surfaces after decoration as any patching or touch-up of even minor damage subsequent to the final finish may be difficult to conceal for Levels 3, 4 and 5.

Where fire resistance, smoke resistance, or sound control is required for systems using gypsum panel products, the system’s required level of finish shall be accomplished and applicable building codes shall be followed. Refer to GA-600 *Fire Resistance and Sound Control Design Manual*.

**LEVEL 0:** *Typically specified in temporary construction or whenever the final decoration has not been determined.*

**No taping, finishing, or accessories required.**

**LEVEL 1:** *Typically specified joint treatment in smoke barrier applications and areas not normally open to public view such as plenum areas above ceilings, attics, and other areas where the assembly would generally be concealed.*

**All joints and interior angles shall have tape embedded in joint compound. Excess joint compound and tool marks are acceptable; fastener heads need not be covered.**

*Accessories are not required, unless specified in the project documents.*

**LEVEL 2:** Typically specified where gypsum panel products are used as a substrate for tile; may be used in garages, warehouse storage or other similar areas where surface appearance is not a concern.

All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. If joint compound is applied over the body of the tape and smoothed at the time of embedment in Level 1, it shall satisfy the conditions of this level.

Fastener heads and accessories shall be covered with one (1) coat of joint compound. Surface shall be free of excess joint compound. Tool marks are acceptable.

**LEVEL 3:** Typically specified in appearance areas that are to receive heavy- or medium-texture finishes (spray or hand applied) before final painting, or where heavy-duty/commercial grade wallcoverings are to be applied as the final decoration. The design professional shall specify the mock-up procedure and mock-up construction details within the project documents. This is not the correct level of finish for smooth wall designs or applications where light textures, non-continuous textures, or lightweight wallcoverings are to be applied.

All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. One (1) separate coat of joint compound shall be applied over all joints and interior angles. Fastener heads and accessories shall be covered with two (2) separate coats of joint compound. The surface shall be smooth and free of tool marks.

NOTE: It is recommended that the final decoration specification (e.g. painting specification) include the application of a priming material prior to the decoration.

**LEVEL 4:** Typically specified in appearance areas where smooth wall designs are decorated with flat paints, light textures, non-continuous textures, or wallcoverings are to be applied. The design professional shall clearly indicate the areas that meet these criteria on the finish schedule and/or plans, specify the mock-up procedure and mock-up construction details within the project documents. Non-flat or dark/deep tone paints are not recommended; refer to Level 5.

In critical lighting areas, flat paints applied over light continuous textures may reduce joint photographing.

The weight, texture, and sheen level of wallcoverings applied over this level of finish should be carefully evaluated. Joints and fasteners must be adequately concealed if the wallcovering used is of lightweight construction, contains limited pattern, has a sheen level other than flat, or any combination thereof.

Unbacked vinyl wallcoverings are not recommended over this level of finish.

All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Two (2) separate coats of joint compound shall be applied over all flat joints and one (1) separate coat of joint compound shall be applied over interior angles. Fastener heads and accessories shall be covered with three (3) separate coats of joint compound. The surface shall be smooth and free of tool marks.

Where glass mat and/or fiber reinforced gypsum panels are installed, refer to the gypsum panel or finishing product manufacturers for specific finishing recommendations.

NOTE: It is recommended that the final decoration specification (e.g. painting specification) include the application of a priming material prior to the decoration.

**LEVEL 5:** Typically specified in appearance areas where smooth wall designs are decorated with non-flat paints (i.e. sheen/gloss) or other glossy decorative finishes, dark/deep tone paints are applied, or critical lighting conditions occur. The design professional shall clearly indicate the areas that meet these criteria on the finish schedule and/or plans, and specify the mock-up procedure and construction details within the project documents. **This level of finish is the most effective method to provide a uniform surface and minimize the possibility of joint photographing and/or fasteners showing through the final decoration.**

All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin consistent coating of joint compound over all joints and interior angles. Two (2) separate coats of joint compound shall be applied over all flat joints and one (1) separate coat of joint compound shall be applied over interior angles. Fastener heads and accessories shall be covered with three (3) separate coats of joint compound. A skim coat of joint compound or a material manufactured especially for this purpose shall be applied to the entire surface. The surface shall be smooth and free of tool marks (see “Skim Coat” in Comments).

Where glass mat and/or fiber reinforced gypsum panels are installed, refer to the gypsum panel manufacturer for specific finishing recommendations.

NOTE: It is recommended that the final decoration specification (e.g. painting specification) include the application of a priming material prior to the decoration.

## V. COMMENTS

**Critical (Severe) Lighting Areas.** Examples include wall and ceiling areas that are illuminated or flooded with artificial and/or natural light. Strong oblique light from windows or surface-mounted light fixtures may exaggerate minor surface differences. Where critical lighting cannot be avoided, the effects can be minimized by skim coating the entire surface, decorating the surface with medium to heavy textures, or the use of draperies and blinds that soften shadows. In general, non-flat and dark/deep tone paints highlight minor surface differences, whereas textures conceal these minor differences.

**Dark Paints.** Colors with deep or strong hues, and even flat paints, tend to magnify imperfections in the finished gypsum panel surface and increase the possibility of joint photographing. A skim coat over the gypsum panel surface will minimize these conditions. Natural and artificial lighting becomes critical for these surfaces.

**Environmental Control.** The potential for finishing and decorating problems are minimized when temperature, humidity, and airflow remain constant and as close to occupancy environmental conditions as possible. A minimum temperature of 50°F (10°C) shall be maintained continuously for 48 hours prior to and throughout the finishing process until the project is completed/occupied. For excessively humid, hot, cold, and dry situations, refer to GA-236 *Joint Treatment Under Extreme Weather Conditions*.

**Inspection Criteria.** The normal viewing position shall be at a minimum distance of five (5) feet (1.5 m) perpendicular from the surface. Blemishes should not be visible from a normal viewing distance with normal light. Inspection lighting conditions are described as those in place when the project is finished. This includes, but is not limited to; design lighting (e.g. wall washers, spots and floods, etc.) and natural lighting. Consideration shall be given to window treatment and/or any other decorative finishes that could affect lighting and viewing.

**Jobsite Mock-Up.** For Levels 3, 4 or 5, the mock-up shall be specified by the design professional for two critical reasons;

- 1) To verify that the correct level of finish has been specified and is appropriate for the selected location within the building/project.
- 2) To determine if the appearance and physical performance of the final decoration are achieved before finishing work may proceed.

Approved jobsite mock-ups may become part of the completed work if undisturbed at time of substantial completion of the building. Alternative mock-up designs or any changes in the final decoration that deviate from the contract documents should be specifically approved by the design professional.

**Manufacturer's Recommendations.** Individual manufacturer's recommendations may vary from what is recommended herein, in which case, the manufacturer's recommendations should be followed.

**Primer.** A material that is formulated to be applied over the entire prepared gypsum panel surface prior to decoration. The priming material must be suitable for the substrate and applied as recommended by the coating manufacturer and shall be included within the paint specification.

NOTE: It is recommended that the final decoration specification (e.g. painting specification) include the application of a priming material prior to the decoration. For more information, see the Drywall Finishing Council publication *Recommended Paint Systems Applied Over Gypsum Board, Glass-Mat and Fiber-Reinforced Gypsum Panels*.

**Sanding.** Joint compound applied over joints, fasteners, and accessories should be finished as smoothly as possible to minimize sanding. Do not sand compound flush to panel surface over joints, fasteners, and accessories. Select sandpaper, sanding film, and/or abrasive mesh with grit as fine as possible that still allows for an acceptable sanding performance. Care shall be taken to ensure that the gypsum panel surface is not scuffed or raised during the sanding process.

**Skim Coating.** Skim coating is a process intended to conceal minor surface differences and create a more uniform surface. The objective of skim coating is to achieve total coverage of the entire surface, which is typically accomplished by using a drywall broad knife to force the material into the surface pores and imperfections, then shearing the excess compound from the surface. There is no specific mil thickness that constitutes a proper skim coat. This process may also be accomplished with spray applied materials or specialty products formulated for that purpose.

NOTE: Joint compound used for skim coating shall have a "trowel consistency" such that the viscosity of the material being used could be applied by a trowel. Various tools and applications may be used for skim coating, so long as consistent coverage is accomplished.

Skim coating will not approximate a plastered finish/surface. Once the skim coating material dries, treated joints, filled voids, and spotted fastener heads may be visible.

**Texturing.** Texturing is the application of material to create a desired textured effect. Unless otherwise specified by the texture manufacturer, a priming material shall be applied over the finished gypsum panel surface prior to decorating. Textured surfaces must be dry before painting.



## VI. RESOURCES

Designers and specifiers are encouraged to consult the following reference documents;

ASTM C11 *Standard Terminology Relating to Gypsum and Related Building Materials and Systems*. ASTM International, West Conshohocken, PA.

ASTM C840 *Standard Specification for Application and Finishing of Gypsum Board*. ASTM International, West Conshohocken, PA.

DWFC *Method For Inspecting Interior Joint Treated Gypsum Panel Surfaces*. Drywall Finishing Council, [www.dwfc.org](http://www.dwfc.org)

DWFC *Recommended Paint Systems Applied Over Gypsum Board, Glass-Mat and Fiber-Reinforced Gypsum Panels*. Drywall Finishing Council, [www.dwfc.org](http://www.dwfc.org)

DWFC *Recommended Surface Treatment For Finishing Gypsum Panels To Attain A Level 5 Finish*. Drywall Finishing Council, [www.dwfc.org](http://www.dwfc.org)

GA-214 *Quick Reference Guide*. Gypsum Association, Silver Spring, MD. [www.gypsum.org](http://www.gypsum.org)

GA-216 *Application and Finishing of Gypsum Panel Products*. Gypsum Association, Silver Spring, MD. [www.gypsum.org](http://www.gypsum.org)

GA-236 *Joint Treatment Under Extreme Weather Conditions*. Gypsum Association, Silver Spring, MD. [www.gypsum.org](http://www.gypsum.org)

Master Painters Glossary, Painting Contractors Association, Maryland Heights, MO. [www.pcapainted.org](http://www.pcapainted.org)

Contact one of the following associations for additional assistance:

**Association of the Wall and Ceiling Industry**

513 West Broad Street, Suite 210  
Falls Church, VA 22046-3257  
Telephone: (703) 538-1600  
www.awci.org

**Gypsum Association**

962 Wayne Avenue, Suite 620  
Silver Spring, MD 20910  
Telephone: (301) 277-8686  
www.gypsum.org

**Ceilings and Interior Systems Construction Association**

1010 Jorie Blvd, Suite 30  
Oakbrook, IL 60523  
Telephone: (630) 584-1919  
www.cisca.org

**Painting Contractors Association**

2316 Millpark Drive  
Maryland Heights, MO 63043  
www.pcapainted.org

**Drywall Finishing Council, Inc.**

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