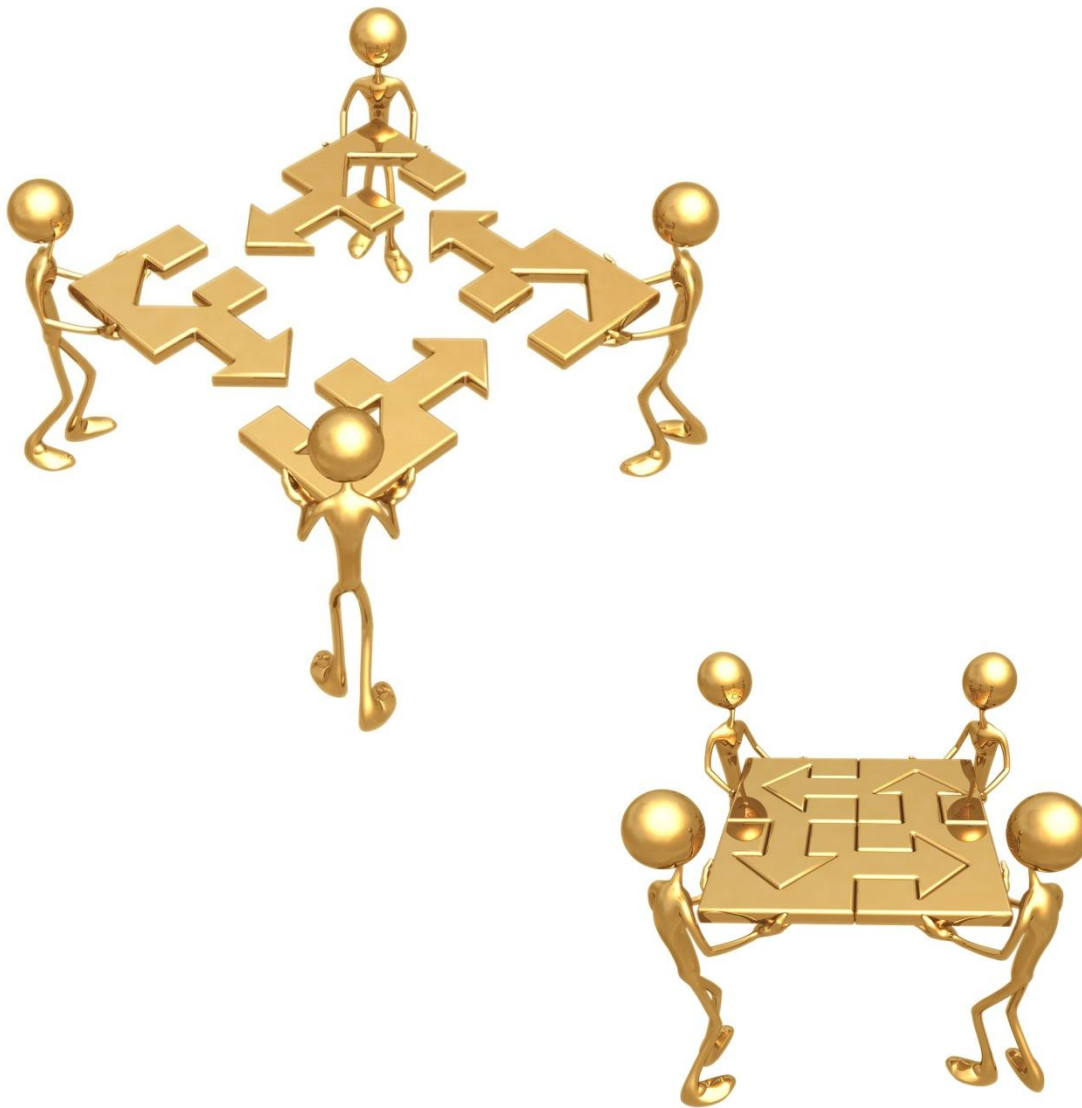


THE INTERIOR GUIDE

A comprehensive guide to finishing and decorating interior gypsum board surfaces



INTRODUCTION

For a while now, there has been a lack of understanding of the issues and concerns that come between the industry trades of *gypsum board* finishing, *paint* and *wallcovering* application and what is stated in the project *specifications*. This lack of understanding leads to finger-pointing whenever performance expectations are not met. To help with this issue, The Interior Guide is not just a gathering of codes and *standards*; it was created to help understand why and how some of these concerns are created, and to provide aid in specifying the correct application. This is believed to be the first “Guide” that not only addresses the applications and finishing of *gypsum board*, *paint* and *wallcovering* in one document, but is also created by a consensus group of representatives from the *gypsum board*, *paint* and *wallcovering* industries.

The Interior Guide was developed to assist architects, designers, specification writers, contractors and owners to help provide a better understanding of the common strengths and weaknesses that are inherent within these materials and their applications. Understanding and incorporating the proper materials and applications into the jobsite *specifications* should enable all parties involved to agree and understand the requirements of the application of material, and how the final decorated surface should appear and perform. The Interior Guide also explains some of the issues that may occur when the Gypsum Board Levels of Finish and/or Paint Application, and/or *Wallcovering* installation are not correctly followed or specified.

Design professionals, general contractors and owners often anticipate a higher quality of finish and performance than what can be constructed from the jobsite *specifications* that are furnished during the bid process. A *mock-up* can help clarify issues or concerns in appearance, products, application and can even illustrate what the durability or performance of a specified surface can be. If the design professional feels a *mock-up* is necessary, then the *mock-up* procedure and construction details shall be specified within the jobsite *specifications*. Also, consideration should be given to incorporating the *mock-up* within the permanent structure.

The techniques and applications described within this Interior Guide are skill-intensive and perfection cannot always be expected. However, one should not see discrepancies and/or blemishes from a normal standing position under normal decorative lighting conditions.

Manufacturer’s recommendations may vary from what is recommended within this Interior Guide, in which case the specifier needs to choose between the manufacturer’s or the Interior Guide’s recommendations.

Note: The words that are *italicized* in this document are in the terminology section.

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GENERAL NOTES

(Pertaining to Gypsum Board)

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) and a relative humidity of 25% to 60% should be maintained continuously for 48 hours prior to and throughout the finishing process until applied materials are thoroughly dry. It is recommended that the temperature and humidity be maintained at levels close to occupancy until the construction is complete and the building is occupied. Keeping the humidity and temperature levels maintained will help with thermal movement within the wall and ceiling surfaces. It is recommended that this requirement be included in the project *specifications* under the general contractor's responsibility.

Accessories

Accessories come in a wide range of shapes and sizes for a variety of uses with *gypsum board*. They include termination, decorations, corner reinforcement, material transition, reveals, coves and many other items.

Flatness/Tolerance

Due to the *gypsum board* finishing process, the abutting *gypsum board* seams/joints, fasteners, and *accessories* must be concealed with fill and *finish coats* of *joint compound*. It is not possible to achieve a finish surface that is a flat plane. This *gypsum board* finishing process occurs above the plane of the *gypsum board*. Achieving proper concealment involves finishing the *joints* and fasteners in gradual arcs that minimize recesses and/or ridges that would otherwise remain visible.

The transition from *joint compound* to *gypsum board* and/or *accessories* will be finished to have a smooth surface, not necessarily flat. Again, the smooth surface in this "Guide" is describing the transition, not a flat or a machined finish/surface.

Here are some other items that affect the flatness of *gypsum board*. *Gypsum board* is a panel product. The plane and alignment of the panels depend on the plane and alignment of the framing members, backing or devices to which it is attached, and/or conceals.

The tolerance of 1/8" in 10'-0" is commonly used in jobsite *specifications* and referred to as the "industry standard" for flatness in *gypsum board* finishing. However this tolerance was originally created for wood framing. It was established to help minimize the use of twisted or bowed lumber that would typically cause issues later in the project.

Keep in mind, in wood framing the top and sill plates are the same width dimension as the framing members. Blocking is able to be inset of the framing members with fasteners (typically nails) that are driven flush, eliminating flatness issues.

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This 1/8" in 10'-0" has carried over into metal stud framing. The 1/8" in 10'-0" tolerance should be used for vertical alignment (plumb) of the metal studs only (excluding the track and screws). Metal stud framing is typically installed well within this tolerance. Concerns become relevant when backing is introduced to the framing or when the wall is checked for flatness or plumb over backing, screws, track and/or *accessories*.

Here are some items that typically create issues with the flatness criteria:

- **Metal Track** – This item is fabricated to fit around the framing member. Depending on the mil (gauge) thickness of the track, it can provide an additional thickness of 3/32" on each side of the framing member (3/16" overall).
- **Screws** – Truss and Pan Head-type (non bugle) fasteners can have fastener heads that measure 3/32" in thickness and greater. Adding the thickness of the fastener head to the track thickness, the buildup can be 3/16" and greater above the face of the framing members.
- **Backing** – Backing is typically detailed to be applied onto the face of the framing members. All of this thickness is outward of the face of the framing member.
- **Accessories** – Control joints, corner beads, "L" moldings etc. are considered *accessories*. These *accessories* are created with a *joint compound* gap (allows *joint compound* to fill and cover the attachment flange) with a screed edge that is 1/32" to 1/16" above the finish accessory creating a smooth (not flat) transition.

When all of the above items are compounded, along with the finishing (fill and finish method) of flat *joint(s)* and *angles* into an assembly, it should be understood why a flatness tolerance is unachievable. It should also be understood this variation typically has nothing to do with the installation or workmanship. Rather, it's the result of the products used in the designed assembly.

Critical Lighting

Critical lighting refers to a surface that is illuminated or flooded with artificial and/or natural light. *Critical lighting*, such as strong oblique light from windows or surface-mounted light fixtures, will exaggerate minor surface differences. Where *critical lighting* cannot be avoided, the effects can be minimized by either *skim coating* the entire wall or ceiling surface, decorating the surface with medium to heavy textures, or using draperies and blinds. In general, non-flat and dark/deep tone *paints* highlight minor surface differences, whereas textures and *flat paints* conceal minor differences.

Joint Photographing

Joint photographing is an occurrence where the finished *joint* areas shadow through the surface decoration. *Joint photographing* is usually only visible when viewed at an angle or under side lighting. The cause is either a texture or a porosity variation between the *joint compound* and the face paper of the *gypsum board*.

Mock-Up

A *mock-up* should be specified in the jobsite *specifications* for three critical reasons;

- To determine whether the project *specifications*, industry/maker's recommendations, and workmanship are collectively appropriate for the selected location within the structure.
- To determine if the desired final appearance is achieved. Once completed, the *mock-up* shall be accepted by the design professional, owner, contractor(s) and or any other interested party prior to beginning any widespread finish work.
- To illustrate what the durability (softness, *adhesion*, etc.) of the completed surface before widespread work is completed.

It is recommended that the *mock-up* shall be of sufficient size to represent the requirements of the jobsite *specifications* that may include, but are not limited to, Gypsum Board Levels of Finish, *accessories*, texture, *paint*, *wallcovering*, trim, lighting (natural or artificial), etc. An approved *mock-up* may become part of the completed work if undisturbed at time of substantial completion of the building. Whenever additional measures are required and approved outside of the jobsite *specifications*, project documents should be amended accordingly and additional compensation approved.

Drywall Primer/Drywall Completion Coat

The term "*Drywall Primer*" has brought confusion to the gypsum board and painting industries for quite some time for the reasoning of "what is it" and "who applies it".

"What is it" – *Drywall primer* is typically a *paint* material that is formulated to be applied directly over newly treated *gypsum board* and *joint compound*. There are different types of *drywall primer(s)* on the market. The question is what are the expectations of the *drywall primer*?

If the expectation of the *drywall primer* is to enhance the following coat of *paint* and help seal the surface, then a PVA (poly vinyl acetate) type *drywall primer* is recommended to be specified. This type of *drywall primer* is designed to be applied as a thin film *coating* 4.0 *mils WFT* (no less than 2.0 *mils DFT*) and it does not help with the texture difference that occurs in Gypsum Board Levels 3 and 4 Finishes.

If the expectation of the *drywall primer* is to enhance the *gypsum board* surface, then a priming material known as a *drywall completion coat* is recommended to be specified. A *drywall completion coat* is typically not classified as a *paint* material, it's designed to be applied from 6.0 to 12.0 *mils WFT* (4.0 to 9.0 *mils DFT*) or (2 separate coats at 5 *mils WFT*, this reduces moisture issues). It's formulated not to seal the surface, but to create a film solid that helps provide consistence with the porosity over the *gypsum board* surface and *joint compound*, this film solid also helps minimize the texture differences that occur in Gypsum Board Levels 3 and 4 Finishes.

"Who applies it" – Some feel that because the term *drywall primer* is referenced in the ASTM and the GA standards in the gypsum board sections that it is a material for which the gypsum board finishing contractor is responsible. Others feel that since *drywall primer* is classified as a *paint* material, the painting contractor is responsible for it.

The first step is to determine which type of product is going to be used. This helps decide which trade may or can apply this material. Typically if a *drywall primer* is the material of choice, the painting contractor usually has the responsibility of application. However, if the priming material is a *drywall completion coat* of choice, the application responsibility can be either in the painting contract or in the *gypsum board* contract. The project *specifications* need to direct which trade (painting or gypsum board finishing) will apply what product.

Since the architect/designer knows what appearance or performance they are expecting from the *final decoration*, they shall specify which product is to be used and which workforce shall apply it.

With certain *final decoration* systems, a *drywall primer* (PVA or a *sealer* type) may need to be applied over a *drywall completion coat* to help with angular *sheen* porosity. Where additional finishing is required to correct defects found in the surface after the application of either type of *primer*, a recoat (additional coat) of the *primer* shall be applied to the affected areas after the additional finishing is completed. It should be understood that the application of any *primer* or priming material is not a requirement of the last application or step for Gypsum Board Levels 3, 4 and/or 5 Finishes.

Fuzzed Paper

This is the area of the *gypsum board* face paper that has been touched, glazed, sanded or wiped with either sandpaper or a trowel. Due to the applications or sanding of the *joint compound*, the face of the *gypsum board* is used as a guide to which to finish or sand to, and this area becomes worn and can raise the nap of the face paper. Care shall always be exercised to ensure that the nap of the face paper of the *gypsum board* does not become damaged. The raised nap face paper can become magnified when incorrect *primer/sealers* are applied or when *primers* are spray-applied and not *back roll(ed)* over the surface. **Note:** a *drywall completion coat* material or a *skim coat* can help minimize *fuzzed paper*.

Sanding

Select sandpaper, sanding film, and/or abrasive mesh with grit as fine as possible which still allows for an acceptable sanding rate. Use caution when sanding to minimize sanding marks that may remain visible after painting. Care shall be exercised to ensure that the nap of the *gypsum board* face paper is not raised during sanding operations.

Skim Coat

This is the final application or step in a Gypsum Board Level 5 Finish. A *skim coat* is essentially a film of *joint compound* or manufactured material designed especially for this purpose and that is applied over the entire surface. A traditional *skim coat* is described as having a trowel consistency with the intent being that the viscosity of the *joint compound* be such that it can be applied by a trowel. Other tools may be used for application so long as the trowel consistency is achieved. A manufactured material *skim coat* shall be applied following the requirements of application and tools

The objective of the application is to achieve total *coverage* of the entire surface with the *skim coat*. This can be accomplished by delivering the compound or material to the surface using a broad knife, roller, spray or per manufacturer's recommendations. Once applied, the excess *joint compound* is immediately sheared from the surface for traditional *skim coat* applications. The manufactured material shall be applied and finished per manufacturer's recommendations.

The intent of the *skim coat* is to conceal minor surface differences, minimize *fuzzed paper* and texture differences while providing a more uniform surface to which the *final decoration* can be applied.

Keep in mind, there is no specific mil thickness that constitutes a proper *skim coat* for a traditional application. A *skim coat* will not approximate a plastered surface. Once the *skim coat* dries and has been sanded, the gypsum panel surface may show through and the treated *joints*, filled voids, and spotted fastener heads will likely be visible and the porosity may still vary.

Surface

The transition from *joint compound* to *gypsum board* and/or *accessories* can achieve a smooth surface by lightly sanding. Smooth surface in this "Interior Guide" is describing the transition (feel/appearance), not a flat or a machine finish/surface. It is not possible to achieve a finish surface that is a flat plane; due to the gypsum panel finishing process occurs above the plane of the gypsum panels. Depending on the application of the material, the surface may have a slight texture finish.

Texturing

Texture material can be applied by brush, roller, spray, or trowel, or a combination of these tools, to create the desired effect. A material (pre-texture material, *drywall primer* or application of *joint compound*) shall be applied to the surface prior to texture. This material shall be formulated to minimize the porosity difference across the surface and shall be applied by the trade responsible for applying the texture. Textured wall surfaces are normally painted with a protective *paint coating* after installation. Consult the texture material manufacturer for specific recommendations.

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

GYPHUM BOARD LEVELS OF FINISH

(For Paper-Faced Gypsum Board)

The requirements of finishing *gypsum board* surfaces are categorized in 6 different Gypsum Board Levels of Finish. With Level 0 having no applications to Level 5 with the most applications of finish to the surface. Due to Level 5 having the most applications applied, this does not mean this level of finish shall provide perfection in appearance or flatness, it has the most applications. There are many items that affect the appearance of a *gypsum board* surface. These Gypsum Board Levels of Finish are listed below and are very similar to the requirements of the GA-214 and ASTM C840. The number of applications that are required are described in each Gypsum Board Level of Finish.

Note: The type of *primer* and responsibility can be specified in either the *gypsum board specification* or the *paint specification*. It is the architect/specifier's responsibility to direct who will apply this material. Knowing this information, please check to see if the *primer* (the type) is specified in your *specifications* before receiving bids.

Gypsum Board Level 0

Recommended Locations

- In temporary construction
- Whenever the *final decoration* has not been determined
- Where permanent surface structures (cabinets, mirrors, etc.) are specified over the *gypsum board*
- When permanent wall paneling is specified over the *gypsum board*

Requirements

No taping, finishing, or *accessories* applied

Gypsum Board Level 1

Recommended Locations

Typically specified for plenum areas above ceilings, attics, and other areas where the assembly would not normally be open to public view.

Requirements

All flat *joints* and interior *angles* shall have *tape* embedded in *joint compound*. Excess *joint compound*, tool marks and ridges are acceptable. Fastener heads do not need to be covered with *joint compound*.

General Information

- The requirement for the embedment of tape for a Gypsum Board Level 1 Finish can be achieved a couple of ways.
 - Set or place *joint tape* into the *joint compound*.
 - *Joint tape* can be forced into the *joint compound* with the use of a hand, knife or object.
 - *Joint tape* and *joint compound* can be applied to the surface with a tool/machine that will apply both materials in a uniform method.
 - *Joint compound* does not have to cover the face of the *joint tape* and does not need to be smooth for a Gypsum Board Level 1 Finish.
 - *Accessories* are not required for a Gypsum Board Level 1 Finish. If *accessories* are required, they shall be specified in the project documents
 - A Gypsum Board Level 1 Finish should not be specified to receive a *final decoration of paint or wallcovering*
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Gypsum Board Level 2

Recommended Locations

Typically specified where gypsum panel products are used as a substrate for tile. Also specified where surface appearance is not a concern (e.g. garages, warehouse, storage or other similar areas).

Requirements

All *joints* and *angles* shall have *tape* embedded in *joint compound* and wiped smooth leaving a thin *coating of joint compound* over the *joint tape*. Fastener heads and *accessories* shall be covered with one (1) coat of *joint compound*. Surface shall be free of excess *joint compound*. Tool marks and ridges are acceptable.

Flat joints	1 coat
Interior angles	1 coat
Fastener heads	1 coat
Accessories	1 coat

General Information

- The thin *coating of joint compound* that is left covering the *joint tape* after being wiped with a knife may not be a consistent *coating of joint compound*. This is only an issue if a Gypsum Board Level 2 Finish is specified as the final Gypsum Board Level of Finish; in this case, these voids will need to be filled.
If a higher Gypsum Board Level of Finish than a Gypsum Board Level 2 is specified, this is not an issue; the next application of *joint compound* will fill the voids.
 - It is not recommended that a Gypsum Board Level 2 Finish should be specified to receive a *final decoration of paint or wallcovering*
-

Gypsum Board Level 3

Recommended Locations

Typically specified in areas which are to receive medium to heavy texture finishes (spray or hand applied), or where heavy-duty/commercial grade *wallcoverings* are to be applied as the *final decoration*.

Requirements

All *joints* and *angles* shall have *tape* embedded in *joint compound* and wiped. One (1) additional coat of *joint compound* shall be applied over all joints and *angles*. Fastener heads and *accessories* shall be covered with two (2) separate coats of *joint compound*. The surface shall be smooth, while minor tool marks, sand marks and ridges may be visible.

Flat joints	2 coats
Interior angles	2 coats
Fastener heads	2 coats
<i>Accessories</i>	2 coats

General Information

- Smooth wall applications, light textures, non-continuous textures, or lightweight *wallcoverings* are not recommended over a Gypsum Board Level 3 Finish.
 - For most gypsum-based textures, a “material” (pre-texture material, *drywall completion coat*, a product or application of *joint compound*) shall be applied to the surface prior to texture. This “material” shall be formulated to help provide a consistence in the porosity across the surface.
 - The material shall be specified to be applied by the trade responsible for applying the texture.
 - A Gypsum Board Level 3 Finish should not be specified for a smooth painted surface and the *paint gloss* and *sheen* should not be greater than a *flat*. When a Gypsum Board Level 3 Finish is followed by heavy or medium texture finish, a *flat*, and/or *non-flat paint* finish may be applied.
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Gypsum Board Level 4

Recommended Locations

Typically specified in areas where smooth wall designs are decorated with *flat paint(s)*, light textures, non-continuous textures, or *wallcoverings* are to be applied as the *final decoration*.

Requirements

All *joints* and *angles* shall have *tape* embedded in *joint compound* and wiped. Two (2) additional coat of *joint compound* shall be applied over all flat *joints* and one (1) additional 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 and ridges.

Flat joints	3 coats
Interior angles	2 coats
Fastener heads	3 coats
Accessories	3 coats

General Information

- A Gypsum Board Level 4 Finish should not be specified for a *paint gloss* and *sheen* greater than *flat*. When a Gypsum Board Level 4 Finish is followed by heavy or medium texture finish, *non-flat paints* may be applied.
 - Refer to the *gypsum board* manufacturer for specific finishing recommendations for panels made of non-paper face material.
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Gypsum Board Level 5

Recommended Locations

Typically specified in areas where smooth wall designs are decorated with *non-flat paints* (i.e. *gloss* and *sheen*) or other glossy decorative finishes, dark/deep tone *paints* are applied, or *critical lighting* conditions occur.

Requirements

All *joints* and *angles* shall have *tape* embedded in *joint compound* and wiped. Two (2) additional coats of *joint compound* shall be applied over all flat *joints* and one (1) additional 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 thin *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 and ridges.

Flat joints	3 coats
Interior angles	2 coats
Fastener heads	3 coats
Accessories	3 coats
Skim coat	1 coat

General Information

- A Gypsum Board Level 5 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*.
 - This Gypsum Board Level of Finish is recommended for all *gloss* and *sheen* levels of *paints* (over smooth wall or textured surfaces) and where severe lighting conditions occur.
 - The *skim coat* helps minimize the texture differences between the board face paper and the *joint compound*.
 - Refer to the gypsum manufacturer for specific finishing recommendations for panels made of non-paper face material.
 - When a material manufactured especially for a *skim coat* is used, often times the *completion coat* material is not needed (refer to manufacturer's specifications).
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GENERAL NOTES

(Pertaining to Paint)

Environmental Conditions

Primers and *paints* should only be applied in a controlled environment where the temperature and humidity of the work environment and *substrate* are maintained within the manufacturer's recommended range. If the Contracting Entity provides temporary heating to accelerate a building schedule, the temporary heating must be maintained in areas until the *paint coatings* have fully dried and cured or until *ambient temperatures* reach sixty-five (65°) degrees Fahrenheit.

Critical Lighting

Critical lighting refers to a surface that is illuminated or flooded with artificial and/or natural light. *Critical lighting*, such as strong oblique light from windows or surface-mounted light fixtures will exaggerate minor surface differences. Where *critical lighting* cannot be avoided, the effects can be minimized by either *skim coating* the entire wall or ceiling surface, decorating the surface with medium to heavy textures, or the use of draperies and blinds. In general, non-flat and dark/deep tone *paints* highlight minor surface differences, whereas, textures and *flat paints* conceal minor differences.

Mock-Up (Benchmark Sample)

A sample that serves as a *standard* by which other work may be measured or judged. PDCA *Standard P5* describes the procedure for benchmark sample production and approval. PDCA Approved Benchmark Samples are established utilizing full scale, on-site surface areas. These shall be prepared using the complete specified or approved *paint, coating* and/or decorative system. The sample is to include surface preparation, and the application of the *primer(s)*, intermediate, *finish coat* and *touch-up* materials.

A *mock-up* should be specified in the jobsite *specifications* by the design professionals for three critical reasons;

- To determine whether the project *specifications*, industry/manufacturer's recommendations, and workmanship are collectively appropriate for the selected location within the structure.
- To determine if the desired final appearance is achieved. Once completed, the *mock-up* shall be accepted by the design professional, owner, contractor(s) and or any other interested party prior to beginning any widespread finish work.
- To illustrate what the durability (softness, *adhesion*, etc.) of the completed surface before widespread work is completed.

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It is recommended that the *mock-up* be of sufficient size to represent the requirements of the jobsite *specifications* that may include, but are not limited to, Gypsum Board Levels of Finish, *accessories*, texture, *paint*, *wallcovering*, trim, lighting (natural or artificial), etc. An approved *mock-up* may become part of the completed work if undisturbed at time of substantial completion of the building. Whenever additional measures are required and approved outside of the jobsite *specifications*, project documents should be amended accordingly and additional compensation approved.

Drywall Primer/Drywall Completion Coat

The term “*Drywall Primer*” has brought confusion to the *gypsum board* and painting industries for quite some time for the questions of “what is it?” and “who applies it?”.

“**What is it?**” – *Drywall primer* is typically a *paint* material that is formulated to be applied directly over newly treated *gypsum board* and *joint compound*. There are different types of *drywall primer(s)* on the market. The question is what are the expectations of the *drywall primer*?

If the expectation of the *drywall primer* is to enhance the following coat of *paint* and help seal the surface, then a PVA (poly vinyl acetate) type *drywall primer* is recommended to be specified. This type of *drywall primer* is designed to be applied as a thin film *coating* 4.0 *mils WFT* (no less than 2.0 *mils DFT*) and it does not help with the texture difference that occurs in Gypsum Board Levels 3 and 4 Finishes.

If the expectation of the *drywall primer* is to enhance the *gypsum board* surface, then a priming material known as a *drywall completion coat* is recommended to be specified. A *drywall completion coat* is typically not classified as a *paint* material, it's designed to be applied from 6.0 to 12.0 *mils WFT* (4.0 to 9.0 *mils DFT*) or (2 separate coats at 5 *mils WFT*, this reduces moisture issues). It's formulated not to seal the surface, but to create a film solid that helps provide consistence with the porosity over the *gypsum board* surface and *joint compound*, this film solid also helps minimize the texture differences that occur in Gypsum Board Levels 3 and 4 Finishes.

“**Who applies it**” – Some feel that because the term *drywall primer* is referenced in the ASTM and the GA standards in the gypsum board sections that it is a material for which the *gypsum board* finishing contractor is responsible. Others feel that since *drywall primer* is classified as a *paint* material, the painting contractor is responsible for it.

The first step is to determine which type of product is going to be used. This helps decide which trade may or can apply this material. Typically if a *drywall primer* is the material of choice, the painting contractor usually has the responsibility of application. However, if the priming material is a *drywall completion coat* of choice, the application responsibility can be either in the painting contract or in the *gypsum board* contract. The project *specifications* need to direct which trade (painting or gypsum board finishing) will apply what product.

Since the architect/designer knows what appearance or performance they are expecting from the *final decoration*, they shall specify which product is to be used and which workforce shall apply it.

With certain *final decoration* systems, a *drywall primer* (PVA or a *sealer* type) may need to be applied over a *drywall completion coat* to help with angular *gloss* and *sheen* porosity. Where additional finishing is required to correct defects found in the surface after the application of all types of *primer(s)* and coats of *paints*, a recoat (additional coat) of all types of *primer(s)* and coats of *paints* shall be applied to the affected areas after the additional finishing is completed. It should be understood that the application of any *primer* or priming material is not a requirement or the last application or step for Gypsum Board Levels 3, 4 or 5 Finishes.

Prep Work

The surface shall be dusted/wiped down immediately prior to the application of the *primer(s)* and/or *paint*.

Properly Painted Surface

A surface that is uniform in appearance, color, texture, *hiding*, *gloss* and *sheen*. It shall be free of foreign material, lumps, skins, *runs*, sags, *holidays*, misses or insufficient *coverage*. It is also a surface free of drips, *spatters*, spills or *overspray* caused by the Painting and Decorating Contractor's workforce.

Note: when spraying surfaces, caution shall be taken not to spray onto the floor or other surfaces that may cause foreign particles to become airborne and land onto the wet surface creating issues.

Note: *primers* and *paints* shall be completely dried before additional applications are applied, per manufacturer recommendation. Under normal atmospheric conditions, a waiting period of 12 to 18 hours after application of *primer/sealer* should be observed before decoration is applied. In rainy, humid, and cold weather, a longer waiting period; sometimes as long as 36 to 48 hours may be necessary to make certain the *primer/sealer* coat is absolutely dry.

Ventilation

The circulation of fresh air to remove vapors and gases.

- a. General ventilation refers to an appropriate sized area with reasonable airflow to reduce vapors to levels below the Personal Exposure Limit (PEL).
- b. Local ventilation refers to a mechanical method of vapor removal or air make-up.

Contracting Entity

The general contractor, owner of the property, construction manager, developer or other entity legally responsible for the agreement or authorized agent of any of the above. The Contracting Entity is the final judge in all matters relating to the "Quality of Appearance" and *acceptance* of surfaces. "Quality of Appearance" is a subjective term governed by the Contracting Entity and established by *specification* and reference *standards*. It is controlled by sample review and approval along with jobsite *inspections* and approvals. The Painting and Decorating Contractor is not licensed, qualified or obligated to render any final professional opinion regarding the "Quality of Appearance" of work performed by others.

RECOMMENDED PAINT APPLICATIONS

(Over Gypsum Board)

The “Paint Application” section describes different *paint* methods as the *final decoration* over new freshly treated interior *gypsum board* surfaces.

It is very important to understand *primers* and *paints* need to be applied to the surface not only with the recommended tools or applications, but just as important are the drying times between coats. Before applying a coat of material, the surface and or previous *coating* needs to be checked that it is dry. Do not follow the time period recommendation from the manufacturer, meaning, “This material can be recoated in 1 hour”. The temperature and humidity has an impact and regulates the drying times of these materials. Following the manufactures recommendations for the type of application, checking for dryness between application of coats, and keeping the humidity and temperature within the recommended ranges are all key items for a successful Paint Application.

Note: The type of *primer* and responsibility can be specified in either the *gypsum board specification* or the *paint specification*. It is the architect/specifier’s responsibility to direct who will apply this material. Knowing this information, ensure that the *primer* (what type) is specified in your *specifications* before bid time.

Paint Application 0

Requirements

No application required

Paint Application 1

Requirements

One (1) coat of *primer* applied to the surface. The *primer* shall be applied to achieve the (*DFT*) specified by the manufacturer.

General Information

- This application can consist of a coat of *primer*
 - This application is typically specified where a *final decoration* will be applied at a later time.
-

Paint Application 2

Requirements

One (1) coat of *primer* and one (1) top coat of *paint* applied to the surface. The *primer* and the top coat of *paint* shall be applied to achieve the (*DFT*) specified by the manufacturer.

Primer 1 coat
Paint 1 coat

General Information

- The application of the *primer* and top coat of *paint* can be sprayed and not *back roll(ed)*.
 - If *paint* and *primer* in one is used, see manufacturer’s recommendations
-

Paint Application 3

Requirements

One (1) coat of *primer* and two (2) top coats of *paint* applied to the surface. The *primer* and the top coats of *paint* shall be applied to achieve the (DFT) specified by the manufacturer.

Primer 1 coat
 Paint 2 coats

General Information

- The application of the *primer* and the top coats of *paint* shall be rolled or sprayed and *back roll(ed)*.
 - If *paint* and *primer* in one is used, see manufacturer’s recommendations
-

Paint Application 4

Requirements

One (1) coat of *primer* and three (3) top coats of *paint* applied to the surface. The *primer* and the top coats of *paint* shall be applied to achieve the (DFT) specified by the manufacturer.

Primer 1 coat
 Paint 3 coats

General Information

- It is recommended when a deep tone color or *gloss paint* is used with this application, that a *drywall completion coat* material is used as the *primer*. Then a *sealer* is applied over the *drywall completion coat* material (the *sealer* can be tinted and can also be considered as one of the 3 final coats of *paint*), then followed with two (2) top coats of *paint*.
 - The application of the *primer* and the top coats of *paint* shall be rolled or sprayed and *back roll(ed)*.
 - If *paint* and *primer* in one is used, see manufacturer’s recommendations
-

Gloss Levels

(For Latex Paints)

Conventional latex is a *standard* performance latex system which provides suitable performance for residential use and “light use” areas in commercial and industrial installations such as offices and meeting rooms.

Gloss Level 1 – Flat or Matte

Recommendation Location

Typically specified on large, smooth or textured surfaces. Recommended to be applied over Gypsum Board Levels 3, 4 or 5 Finishes. A Paint Application 3 is recommended when a Gloss Level 1 is used for *final decoration*. If a Gloss Level 1 is used in areas that are recommended for a Gypsum Board Level 2, then a Paint Application 2 can be applied.

Pros - Very easy to touch-up. Minimizes visibility of surface blemishes.

Cons - Easily marked and stained. Not recommended for surfaces exposed to constant contact, where burnishing and dirt pick-up would be excessive.

Gloss@ 60°: Max. 10 units *
Sheen@ 85°: Max. 35 units *

Gloss Level 2 – Low Sheen

Recommendation Location

Typically specified on wall surfaces such as offices and other low traffic areas. Recommended to be applied over Gypsum Board Level 3 (with texture) or a Gypsum Board Level 5. A Paint Application 3 is recommended when a Gloss Level 2 is used for *final decoration*.

Pros - Ease of touch-up, uniform appearance marks less than Gloss Level 1.

Cons - Marks easier and is less washable than Gloss Level 3.

Gloss@ 60°: Max. 10 units *
Sheen@ 85°: 10–35 units *

Gloss Level 3 – Eggshell

Recommendation Location

Typically specified where a balance of *washability* and durability while avoiding an overly glossy appearance is a concern. Recommended to be applied over Gypsum Board Level 5. A Paint Application 3 is recommended when a Gloss Level 3 is used for *final decoration*.

Pros - *Washability*

Cons - Shows *substrate* blemishes

Gloss@ 60°: 10–25 units *
Sheen@ 85°: 10–35 units *

Gloss Level 4 – Satin

Recommendation Location

Typically specified where the Gloss Level provides a higher level of durability, but *sheen accents* surface defects. Recommended to be applied over Gypsum Board Level 5. A Paint Application 3 is recommended when a Gloss Level 4 is used for *final decoration*.

Pros - *Washability*

Cons - Shows *substrate* blemishes and reflects light somewhat

Gloss@ 60°: 20–35 units *

Sheen@ 85°: Min. 35 units *

Gloss Level 5 – Semi-Gloss

Recommendation Location

Typically specified where *washability* and abrasion resistance properties are most important. Recommended to be applied over Gypsum Board Level 5. A Paint Application 3 is recommended when a Gloss Level 5 is used for *final decoration*.

Pros - Resistant to stains and dirt retention

Cons - Difficult to touch up and shows *substrate* blemishes

Gloss@ 60°: 35–70 units *

Sheen@ 85°: -----

Gloss Level 6 – Gloss

Recommendation Location

Because this Gloss Level reflects light from the surface of the *coating* like a mirror, it is rarely used, except on smooth surfaces and trim work.

Recommended to be applied over Gypsum Board Level 5. A Paint Application 4 is recommended when a Gloss Level 6 is used for *final decoration*.

Pros - Ease of clean up (i.e. *washability*) and abrasion resistant.

Cons - Highly light reflective and shows all *substrate* blemishes. Very difficult to touch up.

Gloss@ 60°: 70–85 units *

Sheen@ 85°: -----

* The gloss and sheen level requirements may be different per paint manufacturer, please refer to manufactures recommendations or specifications.

GENERAL NOTES

(Pertaining to Wallcovering)

Environmental Conditions

Wallcoverings are a prefinished item and should only be installed in a controlled environment where the temperature and humidity of the work environment and *substrate* are maintained within the manufacturer's recommended range. If the Contracting Entity provides temporary heating to accelerate a building schedule, the temporary heating must be maintained in areas where *wallcovering* have been installed until *ambient temperatures* reach sixty-five (65°) degrees Fahrenheit. Temperature must be maintained for at least three (3) weeks after the last strip has been installed.

Quality of the Installation

Wallcovering is deemed properly installed when: *Adhesion* is complete with no loose or curling edges, lifting seams, air bubbles or paste bumps. Pattern match is achieved. *Wallcovering* shall be installed plumb or square. **Note:** A pattern may appear out of square due to a *substrate* or construction defect that is beyond the control of the installer. *Wallcovering* shall be free from visible shrinkage. Seams are properly trimmed, with no frayed edges, allowing for pattern match and without evidence of excessive pressure that would score the *substrate* and affect *adhesion*. *Wallcovering* surface is free from adhesive residue. Color *shading* is inherent in natural and simulated natural materials and should be expected.

Primers For Wallcovering

White, self-sizing, water base, "universal" (all-purpose) *wallcovering* primers have recently been introduced into the marketplace for use on new *gypsum board* surfaces. These products are designed to minimize *damage* if *wallcoverings* are subsequently removed, bind poor latex *paint*, allow hanging over glossy surfaces and existing vinyl(s), hide wall colors, and to be water washable. **Note:** Please consult with the manufacturer of the *wallcovering* for the correct primer.

Contracting Entity

The contracting entity shall inspect surfaces prepared by others for compliance with the manufacturer and installer's surface requirements. The manufacturer and purchaser (or purchaser's agent) of the *wallcovering* shall inspect the *wallcovering* for defects prior to installation. The purchaser must report any discrepancies in the *wallcovering* pattern, texture or color to the *wallcovering* manufacturer or distributor as soon as possible to avoid installation disputes.

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WALLCOVERING METHODS

(Over Gypsum Board)

This section describes and recommends different *wallcovering* methods as the *final decoration* over new freshly treated interior *gypsum board* surfaces.

Method 0

Wallcovering shall be applied directly to *gypsum board* surface with no *primer*.

Generally a commercial setting with the use of acoustic *wallcovering*, cork and cork veneer. Applications are generally done in Atriums, lunchrooms, basements and areas that are seen from a distance or with low lighted walls.

Fabric backed *wallcovering* with the use of *drill cloth* and *osnaburg* are mostly used in this method.

Most *Type II* and *Type III* commercial grade *wallcoverings* are applied using this method.

Inspect all *wallcoverings* so there are no *defective* materials before installation. The *wallcovering* installer may not know if the material defect is caused by the manufacturer, backing manufacturer, shipper, and/or third party handler. *Acceptance* should be approved by all parties involved.

Install *wallcovering* to manufacturer's *specifications*. Installation is generally done *vertically*, although with wide materials are sometimes accomplished by horizontally *railroading* the material.

Method 1

All prepared *gypsum board* surfaces to receive *wallcovering* shall have one coat of *primer* (*wallcovering primer*) applied.

The application of the *primer* can facilitate the removal of the *wallcovering* at a later date and minimize the *damage* to the *gypsum board* substrate.

Primer shall be applied to the Dry Film Thickness (DFT) and application conditions that are specified by the manufacturer.

Most commercial and some residential settings will use various types of *wallcovering* such as Electromagnetic, Natural Textile, Polyolefin/Synthetic Textile, Vinyl Coated Paper, White Board, and Wood Veneer.

Any one of these with the combination of various *wallcovering* backing materials such as Latex Acrylic, Non- Woven Fabric, Paper and *Scrim* are used in this method.

Inspect all *wallcovering* so there are no *defective wallpaper* materials before installation. The *wallcovering* installer may not know if the material defect is caused by the manufacturer, backing manufacturer, shipper, and/or third party handler. *Acceptance* should be approved by all parties involved.

Install *wallcovering* to manufacturer's *specifications*. Installation is generally done *vertically*.

Method 2

All prepared *gypsum board* surfaces to receive *wallcovering* shall have all elements of Method 1 and the following:

The application of the Wallpaper Sizing will allow the *wallcovering* to lay flatter and appear smoother in addition to drying level and even.

Very few commercial and most residential settings will use various types of *wallcovering* such as Coated Fabric, Expanded Vinyl/Printable *Wallcovering*, Flocked, Foils, Glass Textile, Molded, Murals, Natural Fibers, String and Vinyl Coated *wallcovering*. Any one of these with the combinations of various *wallcovering* backing materials as in *Bridging Liner*, Fabric Backed, In-Register Paper, Liner Paper, Paper Backed and Vinyl/Solid Sheet Vinyl are installed using this method.

Inspect all *wallcovering* so there are no *defective wallpaper* materials before installation. The *wallcovering* installer may not know if the material defect is caused by the manufacturer, backing manufacturer, shipper, and/or third party handler. *Acceptance* should be approved by all parties involved.

Install *wallcovering* to manufacturer's *specifications*. Installation is generally done *vertically*.

INSPECTION CRITERIA

The following proper *inspection* criteria need to be followed when evaluating *gypsum board* surface, painted surfaces and or *wallcovering* surfaces. If the proper criteria are not followed, added costs will typically be incurred by the general/owner due to these industry practices for evaluating surfaces not being followed.

Type of Inspection

All three finishes (*gypsum board*, *paint* and *wallcovering*) shall be judged by viewing and not by touching or rubbing the surface. Straight edges and/or squares should not be used to determine if “flatness” or a Gypsum Board Level of Finish has been achieved or if *wallcovering* aligns with one another.

Inspection Criteria

Gypsum Board

Walls – The normal viewing position shall be in a standing position at a minimum distance of five (5) feet perpendicular from the surface and viewed at any angle.

Ceilings – Ceilings are viewed from the floor in a standing position.

Paint Finishes

Walls – The normal viewing position shall be in a standing position at any angle provided it is established at a minimum distance of thirty-nine (39) inches from the surface.

Ceilings – Ceilings are viewed from the floor in a standing position.

Wallcovering

Walls – The normal viewing position shall be in a standing position at any angle provided it is established at a minimum distance of thirty-nine (39) inches from the surface.

Ceilings – Ceilings are viewed from the floor in a standing position.

Inspection Lighting

All three finishes (*gypsum board*, *paint* and *wallcovering*) shall be judged with *inspection lighting* that is representative of the *finished lighting* conditions in terms of intensity and location. Consideration shall be given to window treatment and/or any other decorative finishes that could affect lighting and viewing.

Note: Extreme bright lights should not be used to artificially create critical harsh side lighting to judge final workmanship for *acceptance*, this includes flashlights. However, these types lights can be used to illustrate missed sanded areas, nicks, dings, fastener pops and so on before *primer* or paint is applied. These lights are not used to evaluate the flatness of the surface.

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When to Inspect

A surface that receives *gypsum board* finish, *paint* and/or *wallcovering* should be evaluated at the recommended times below:

Gypsum Board

Once the *gypsum board* surface is finished to the specified Gypsum Board Level 3, 4, or 5 (without texture) Finishes, it should be evaluated before the *primer* (or *drywall completion coat*) is applied and again after the *primer* (or *drywall completion coat*) is applied and cured.

For surfaces that will receive a texture decoration, the surface should be evaluated after the pre-texture base coat, gypsum texture, and the *primer* (or *drywall completion coat*) is applied and dried.

Paint Finishes

The surface shall be evaluated after the *primer* is applied and dried, and again after the final top coat of *paint* is applied and dried.

Wallcovering

It recommended that the surface is evaluated before the *wallcovering* primer is applied and again after the *wallcovering* is applied.

What to Look For

Gypsum Board

Before the *primer* (or *drywall completion coat*) material is applied, attention should focus on dimpling over fastener heads and swelling of *joint tape* (paper) (may be indicators of improper environmental conditions). The *joint compound* should be feathered to the surface and the overall appearance should be/appear smooth. Tool marks, pitting, ridges, over sanding, miss-aligned trim *accessories* and/or excessive wavy corners should not be visible.

After the *primer* (or *drywall completion coat*) material is applied, if dimpling over fastener heads, swelling of *joint tape* (paper) appears, the priming application should be stopped. The application should be stopped and a jobsite meeting with all of the responsible parties shall be formed to resolve the issue before proceeding with the remainder of work.

Paint Finishes

Before the *primer* (or *drywall completion coat*) is applied – attention shall focus on dimpling over the fastener heads and swelling of *joint tape* (paper) (may be indicators of improper environmental conditions, or moisture introduced to the surface). The overall surface should appear smooth and not see tool marks, pitting, ridges or over sanding.

After *primer* (or *drywall completion coat*) is applied, if dimpling over fastener heads, swelling of *joint tape* (paper) appears, the painting application should be stopped and a jobsite meeting with all of the responsible parties shall be conducted to resolve the issue.

After *primer* and top coats of *paint*, attention shall focus on full, consistent *coverage* of the *primer* and *paint* over the entire surface. The surface shall have *uniformity* in color, *sheen* and porosity.

Wallcovering

Before the *wallcovering* primer is applied – attention shall focus on whether there are nicks, dings and/or gouges that may transfer through the *wallcovering* material.

After the *wallcovering* primer is applied – if dimpling over fastener heads, swelling of *joint tape* (paper) appears, the application should be stopped and a jobsite meeting with all of the responsible parties will need to be conducted to resolve the issue.

Attention shall focus to ensure that there are no bubbles in the *wallcovering*; that seams are tight to each adjoining piece or at trim edge.

Basic Protocol for the Workforce Inspecting Surfaces

The Contractor is required to inspect surfaces that they have finished to determine, by reasonable and visible evidence, that the finish will satisfactorily adhere to surfaces provided by others and will perform as specified. The Contracting Entity has the responsibility to determine that a surface is complete and that the “Quality of appearance” is such that it is ready for finishing of *gypsum board*, painting or *wallcovering*. When the previous trade has completed its work and/or notification to proceed has been given, such action will be construed as tacit evidence that all work has been inspected, and that it is warrantable, completed and ready for finishing. If “Quality of Appearance” of a surface, prior to finishing, is judged marginal or unacceptable by others conducting essential *inspection*, such alleged defective work must be corrected prior to priming and finishing so that all surfaces are made complete and ready for finishing. If the unacceptable work is not made complete and ready for finishing, the contractor will halt work until directed to proceed. In such an event, the contractor on halted work may be entitled to additional compensation.

CHECK LIST

(For the Specifier)

To help determine the appropriate Gypsum Board Level of Finish, Paint Application or *Wallcovering* over interior paper-faced *gypsum board*, the below items should be reviewed, understood and specified accurately.

Framing

It is important that the framing, fastening of *gypsum board*, control joint placement and the finishing requirements are properly specified and shall be installed per ASTM C840, GA-216 and per this Interior Guide document.

Location

Specify the correct board for the location and the type of use.

Decorative Finishes

It is important to understand how the *gloss* and *sheen* of *paints* or the type of *wallcoverings* can help determinate what Gypsum Board Level of Finish should be used to provide the best appearance. Also understand that the type and method of application of the *primers* and *paints* may have an effect on the appearance as well as the *gloss* and *sheen* of the *paint*.

Critical Lighting

Critical lighting will amplify minor surface differences. Creating artificial *critical lighting* to force a contractor to provide a finish greater than what is specified shall be avoided. Specifying the “Inspection Criteria” from this “Interior Guide” shall help this situation and keep the end costs down.

Surfaces

With Gypsum Board Levels of Finish, as the Level number increases, the better the finished surface appearance will be. However, the higher the Gypsum Board Level number, the greater the finish cost will also be. Surfaces that have *critical lighting* conditions, *paints* with *gloss* and *sheen* levels greater than *flat* or thin *wallcoverings* are all recommended to be applied over a Gypsum Board Level 5 Finish. Surfaces that have *gloss* and *sheen* levels equal to *flat*, medium textured finishes or medium weight *wallcoverings* are recommended to be applied over a minimum Gypsum Board Level 4 Finish. Surfaces that are to receive heavy textured finishes or heavy weight *wallcoverings* are recommended to be applied over a minimum Gypsum Board Level 3 Finish.

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Different Gypsum Board Levels of Finish can be used on the same project, even in the same area. This may reduce the cost, and still meet the appearance and function objectives for the wall and ceiling surfaces. It is recommended that the Gypsum Board Levels of Finish be indicated in the *specifications* along with the room finish schedule. By identifying each room with the Gypsum Board Level of Finish and the *paint* material (*coating*) to be applied, the contractor will be able to better prepare the cost estimate and have an understanding of the expected finish appearance.

Flatness

Once the *gypsum board* surface is sanded and completed, the surface will be smooth, **not** flat. A flat surface or finish is unachievable, even if it is specified. Remember, there are many items within the wall assembly that will affect the flatness of the board.

Please see “Flatness/Tolerance” under the “General Notes” of the “gypsum board” section of this “Interior Guide”.

Drywall Completion Coat

Drywall completion coat is a material/product that should be specified if the porosity difference between the *joint compound* and the *gypsum board* face paper is a concern and needs to be minimized. Once applied, these products provide a surface that is more uniform for applying *paint* and gypsum based textures, as well as enhancing the *gypsum board* finish. Specifying this material and application responsibility to the correct work force is important.

Paint Primer

Paint *primers* are formulated to provide different results. The question that needs to be asked when specifying or using a *primer* is “what does this *primer* need to achieve (*tooth*, *adhesion*, filler, etc.)?” Paint *primers* typically provide *tooth* for the following top coat of *paint*. Specifying the correct material for the final coat of *paint* as well as the correct work force for application is important.

Mock-up

A *mock-up* should be specified in the jobsite *specifications* for the following three reasons;

- To determine whether the project *specifications*, industry/manufacturer’s recommendations, and workmanship are collectively appropriate for the selected location within the structure.
- To determine if the desired final appearance is achieved. Once completed, the *mock-up* shall be accepted by the design professional, owner, contractor(s) and or any other interested party prior to beginning any widespread finish work.
- To illustrate what the durability (softness, *adhesion* etc.) of the surface is once completed before widespread work is completed.

Be sure to specify that the approved *mock-up* can become part of the completed work if undisturbed at time of substantial completion of the building. Whenever additional measures are required and approved outside of the jobsite *specifications*, project documents should be amended accordingly and additional compensation approved.

One of the main reasons it is recommended that a *mock-up* be constructed is because design groups, general contractors and owners typically foresee a higher quality of finish than what can be realized from the jobsite *specifications* that are furnished for the bid process.

Fire Ratings

Where fire resistance, smoke resistance, or sound control is required for systems using *gypsum board* products, the applicable building codes shall be followed along with referring to the Gypsum Association's *Fire Resistance Design Manual*, GA-600.

RECOMMENDED SURFACES/PERFORMANCES

Levels of Finish

Recommended Gypsum Board Levels of Finish

Gypsum Board Level of Finish	Gloss/Sheen Paint	Flat Paint	Wallcovering
Level 0	N/A	N/A	N/A
Level 1	N/A	YES ¹	N/A
Level 2	N/A	Yes ¹	N/A
Level 3 – Smooth	No	Yes	Commercial Grade
Level 3 – Light Texture	N/A	N/A	N/A
Level 3 – Medium Texture	Yes ²	Yes	N/A
Level 3 – Heavy Texture	Yes ²	Yes	N/A
Level 4 – Smooth	No	Yes	Yes
Level 4 – Light Texture	No	Yes	N/A
Level 4 – Medium Texture	Yes ²	Yes	N/A
Level 4 – Heavy Texture	Yes ²	Yes	N/A
Level 5 – Smooth	Yes ³	Yes	Yes
Level 5 – Light Texture	Yes ²	Yes	N/A
Level 5 – Medium Texture	Yes ²	Yes	N/A
Level 5 – Heavy Texture	Yes ²	Yes	N/A

N/A – Not Applicable

- 1 - If *uniformity* of color is desired, one (1) coat of *primer, flat* or *matte paint* may be applied
- 2 - When a medium or heavy texture finish is applied, *non-flat paints* may be used, when *non-flat paints* are used, a minimum of a Paint Application 3 is recommended
- 3 - When *non-flat paints* are used, a minimum of a Paint Application 3 is recommended

Paint Applications

When non-flat *sheen paint* is applied, satisfactory results cannot be guaranteed when applied over a Gypsum Board Level 4 Finish. Through no fault of the *gypsum board* or *painting contractor*, “*joint photographing*” is possible with non-flat, low to high *sheens* or deep tone colors.

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Drywall completion coat products are specified and used when porosity is a concern over newly treated *gypsum board* surfaces (Gypsum Board Levels 3, 4, or 5 Finishes). If the final top coat of *paint* is a *flat sheen* it can be applied directly over a *drywall completion coat* product (if specified). However, if the top coat of *paint* has a *gloss* and *sheen* level greater than *flat*, a *sealer* is recommend to be applied over the *drywall completion coat* product to help with enamel holdout.

A *drywall completion coat* not only enhances the *gypsum board* finish, it can also increase the performance of the *paint primer*, due to the formulation changes.

Wallcovering

Heavy and medium weight *wallcovering* – Level 4

Lightweight *wallcovering* – Level 5

Tape Adhesion

Adhesive tape is commonly applied over finished *gypsum board* for a number of reasons. When removing adhesive tape, occasionally portions of *paint*, *joint compound* or, in severe cases, *gypsum board* face paper may be removed. This is sometimes looked upon as a failure in the *paint* or *joint compound*.

This typically occurs when the *adhesion* of the masking tape is greater than the cohesive strength of the *joint compound* or *coating* materials and should not automatically be considered a failure. When evaluating a typical interior *gypsum board* assembly, it should be understood that the finishing compounds typically have the lowest cohesive strength of the entire system.

To help protect this low cohesive strength, completion coats, *primers*, and *paints* shall be applied in accordance with manufacturer's recommendations. Moisture that enters and becomes trapped within the system can rewet and compromise the cohesive strength of the *joint compound* and face paper, and in some cases even swell the *gypsum board* and materials. Jobsite conditions that are not within industry standards may also delay drying times which could result in weakening the assembly.

There are *primers* formulated to either increase *adhesion* and/or *cohesion*, minimize porosity, and prepare the surface for *paint* and so on. *Primers* with different performance levels can affect the assembly.

The *sheen* of *paint* can also affect the bond of the adhesive tape. Typically, adhesive tape bonds greater to non-gloss *paints* than *gloss paints*. All *primers* and *paints* are recommended to be applied at their designed wet film (*mil*) thickness by either a roller or a sprayed and *back roll*(ed) application, keeping a wet edge.

For delicate surfaces, such as freshly painted walls, an adhesive tape with the lowest *adhesion* level is recommended. Adhesive tape should be applied to clean cured surfaces with standard hand pressure; not burnishing the adhesive tape.

It is advised to first try a location to see how the tape may act with the *gypsum board*, i.e. will it fracture the *paint* and *joint compound* from the surface, damaging the finishes.

It is recommended not to leave adhesive tapes applied to surfaces longer than manufacturers' recommendation; *adhesion* increases the longer it is applied to the surface.

Adhesive tape manufacturers recommend adhesive tape should be removed at a 45° angle from the decorative surface and at a speed of one inch per second. If the adhesive tape starts to remove the *paint* from the surface, try scoring the edge of the tape with a razor blade before pulling.

Currently, there is no industry *standard* or recognized test for measuring *adhesion* with the use of adhesive tape over final decorated *gypsum board*. ASTM D 3359 (Standard Test Methods for Measuring *Adhesion* by Tape Test) are methods covering procedures for assessing the *adhesion* of *coating* films to metallic *substrates*, and is often misused as a tape test for *gypsum board* with *final decoration*. ISO 2409 *Paints and Varnishes Cross Cut Test* does not utilize adhesive tape on *gypsum board* surfaces.

Due to the unlimited number of *primers, sealers, paints*, method of applications, job site conditions, adhesive tapes, etc., it is recommended that a benchmark be constructed, evaluated and accepted by responsible parties for cosmetic *acceptance* and durability before any production decorating is started. The benchmark should remain intact until the project is completed.

CONCERNS & RESPONSIBILITIES

Responsibilities and Recognized Industry Practices:

Architect/Designer

Detail and specify proper applications and material to the proper work force. Review and approve the *mock-up* panel before widespread work is started. If applications or materials are not correctly applied, require that a jobsite meeting takes place with proper workforce, *paint* and board bureaus involved so the problem can be resolved before more work is applied.

General Contractor

Provide proper jobsite conditions, coordination of subcontractors, review all submittals and cross-reference jobsite *specifications*, approve *gypsum board*, *paint* and *wallcovering* surfaces prior to application.

Gypsum Board Contractor

Review and understand details and jobsite *specifications*, ensure all *gypsum board* products are compatible and appropriate, avoid over sanding/raising the nap of the face paper, clean sanding dust from surface and floors, provide *touch-up* after *primer* (or *drywall completion coat*) has been applied (if specified or used).

Painting Contractor

Review and understand jobsite *specifications*, ensure all *paint* products are compatible and appropriate, wipe down surfaces immediately prior to *primer* (or *drywall completion coat*, if specified in this *specification*). The *primer* shall be applied so it provides a uniform surface in porosity and appearance before *paint* is applied. The *paint* shall be applied so the final coat is uniform in appearance, color, *gloss* and *sheen*. When using an airless sprayer, the surface shall be immediately *back roll(ed)* once the paint is applied.

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TERMINOLOGY

Accent

Any bright object or color that draws attention.

Acceptance

An agreement, either by express act or by implication from conduct, to the terms of an offer so that a binding contract is formed. If an acceptance modifies the terms or adds new ones, it generally operates as a counteroffer.

Accessories

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

Adhesion

The act or state of adhering (the sticking together of substances in contact with each other as if they were glued). The property that makes a paint film stick to the surface. The degree of attachment between a coating film and the underlying material with which it is in contact.

Ambient Temperature

Surrounding temperature. Often means a comfortable and not extreme range. For proper coating cure, the ambient temperature should be 45° to 86° F. (7° to 30° C).

Angles

Interior/internal angles (less than 180° from plane of surface) are commonly finished using paper tape. External/outside angles (more than 180° from plane of surface) are commonly finished with a protective trim edge (i.e. plastic, metal etc.).

Back Roll

A method where freshly applied paint (wet) is smoothed out with a roller to even the appearance and improve uniformity. **Note:** The roller shall be wet but not dipped at each application. The intent is not to apply more paint or to take paint from the surface, but to even out the sprayed applied paint evenly onto the surface.

Bridging

Ability of paint to span small gaps or cracks through its cohesion and elastic qualities.

Brush Mark

Parallel marks that resemble ridges and valleys that remain in a dried film after a brush application.

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Coat

A layer of paint, varnish, lacquer or other material that is applied and then allowed to dry. To back roll or apply a wet-on-wet film still constitutes a single coat.

Coating

A liquid, liquefiable or mastic composition that is converted to a solid protective, decorative, or functional adherent film after application as a thin layer.

Cohesion

The bond or force that binds a material together.

Commercial Wallcovering

Commercial wallcovering are produced specifically for use in hotels, apartment buildings, office buildings, schools and hospitals. They are manufactured to meet or surpass minimum physical and performance characteristics set forth in Federal guidelines (Federal Specifications CCC-W408). The guidelines focus on requirements for flammability, tear strength, abrasion resistance, washability, scrubability, and stain resistance. Examples of various types of commercial wallcovering are:

Acoustic Wallcovering

Designed for use on vertical surfaces, panels, operable walls and any place sound reduction is a primary factor such as meeting rooms, offices, theaters, auditoriums, restaurants as well as corridors and elevator lobbies. These products are predominantly made of man-made polyester and olefin fibers, and are tested for a special sound attenuation rating known as a Noise Reduction Coefficient (NRC) rating. This rating indicates the amount of sound absorbed into the wall. The higher the number, the more noise absorption.

Cork and Cork Veneer

They have a variegated texture with no definite pattern or design. Cork veneer is shaved from cork planks or blocks and laminated to a substrate that may be colored or plain. Cork naturally absorbs sound, insulates, provides visual contrast and can be used as a bulletin board.

Electromagnetic Wallcovering

Are used to shield sensitive computer equipment from the harmful effects of electromagnetic energy. These are constructed utilizing metallic shielding material. These wallcovering are used where computer equipment or computer storage equipment is housed.

Fabric Backed Vinyl

Wallcovering that has a woven substrate of fabric or a non-woven synthetic substrate. In either case, the substrate is laminated to a solid vinyl decorative surface. General categories of this type of wallcovering are Type I, II or III. Usually produced on drill fabric backing.

Natural Textile

Wallcovering are usually laminated to a backing to enhance dimensional stability and to prevent the adhesive from coming through to the surface. These backings are usually acrylic or paper. Textiles are manufactured in a variety of widths and are constructed of natural fibers. Natural textiles can be finely designed or coarse in texture depending on the desired look.

Paper Backed Vinyl/Solid Sheet Vinyl

Wallcovering that has a paper (pulp) substrate laminated to a solid decorative surface. This type of wallcovering is very durable since the decorative surface is a solid sheet of vinyl. It is classified as scrubbable and peelable.

Polyolefin/Synthetic Textile

Wallcovering are woven and non-woven looking and were developed to give the aesthetic appearance of a natural textile while adding an increased value in stain and abrasion resistance. These products are generally put up with an acrylic or paper backing. Many of these products are comprised of polyolefin yarns, which are olefin fibers made from polymers or copolymers of propylene.

Vinyl Coated Paper

Wallcovering that has a paper substrate on which the decorative surface has been sprayed or coated with an acrylic type vinyl or polyvinyl chloride (PVC).

White Board

This style of wallcovering has a white plastic coating that enables the wallcovering to be used as a writing surface or as a backdrop for video displays or slide presentations. Erasable markers are used to draw presentations or notes. Generally utilized in board rooms or conference areas.

Wood Veneer

These wallcovering are mostly laminated to fabric backing. They are usually made in sheets 18 to 24 inches wide and provided in any length up to 144 inches long. Due to characteristics relative to environmental and grain matching, wood veneers are used mostly in the office or conference room environment along with some other specialty areas, such as large columns. Newer generation veneers have paper backings, they are made up to 36 inches wide and may even be finished with a urethane sealer.

Coverage

The area over which a coating can be spread to attain a specified film thickness. Often used interchangeably with spreading rate or in relationship to hiding power.

Critical Lighting

A condition whereby interior surfaces are flooded by natural or artificial lighting at an oblique angle; such lighting from large expanses windows, glass curtain walls, skylights, or surface-mounted light fixtures.

Defective Wallpaper

The definitions of defects and errors that may be found in wallpaper and other wallcovering and the possible sources.

Drywall Completion Coat

A material specifically formulated to create film solids that helps provide consistence with porosity over the gypsum board surface and joint compound, minimizes texture differences and enhances the gypsum board surface.

Drywall Primer

A paint material that is formulated to be applied directly over newly treated gypsum board and joint compound that provides “tooth” for the following coat of paint.

Drill Cloth

Very course linen or heavy cotton cloth with a diagonal weaver used mostly in high use and protection wallcovering.

DFT

Dry Film Thickness.

Final Decoration

The painting or wallcovering system.

Finish Coat

The final coat in a paint system. Also known as the topcoat.

Finished Lighting

Finished 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 (e.g., skylights, windows, window walls, window treatments, etc.). Consideration shall be given to window treatment and/or any other decorative finishes that could affect lighting and viewing.

Flashing

Uneven gloss or color in a dried paint surface usually resulting from uneven absorption, insufficiently sealed substrate, or poor drying conditions.

Flat

Without luster or gloss.

Flat Paint

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

Gloss

The mirror-like reflectance of light from the surface of a coating or substrate. The shine or luster of a surface. The gloss of paint is generally measured at various standard degree angles such as 85, 60, 45 and 20 degrees from the surface.

Gypsum Board

A generic name for a family of sheet products with a paper facing, used primarily for interior walls and ceilings, consisting of a non-combustible core primarily of gypsum.

Hiding (Hiding Power)

The degree or ability of an opaque coating, applied in a uniform film, to cover, mask or obscure the substrate to which it is applied, or the colors underneath. Hiding power is provided by the paint's pigment.

Hold-Out

The property that provides a low porosity surface which reduces the penetration of subsequently applied coatings. This improves the gloss and color uniformity of finishing coats.

Holidays

Application defects whereby small areas are left uncoated.

Inspection Lighting

Illumination of the installed surface from an angle and at an intensity sufficient to eliminate any shadowing that may be caused by other illumination striking the surface at any angle.

Joint

The seam produced by the placement of two (2) sheets of gypsum board next to each other.

Joint Compound

A material used for covering accessories and joints in order to finish a gypsum board surface smooth. Often referred to as "mud". **Note:** Setting type joint compounds must fully "set" before additional coats are applied; ready-mix compounds must be fully "dried" before additional coats are applied.

Joint Photographing

The shadowing of the finished joint areas through the surface decoration.

Joint Tape

A special paper (or fiberglass) tape for concealing and reinforcing the board joints.

Latent Damage

Damage to surfaces by causes beyond the control of the Painting and Decorating Contractor after the Painting and Decorating Contractor's work has been completed. Examples of such include, but are not limited to, building settlement, cracks, water damage, earthquake damage, nail and/or screw pops or expansion and/or contraction of substrate.

Mil

A standard unit used in measuring the thickness of paint films. Equal to one thousandth of an inch (0.001 inch); in metric equal to 25.4 microns.

Mock-Up

A representative example of a paint system or wall covering application used as a reference standard for the remainder of the project.

Non-Flat Paint

A paint material specifically manufactured to produce greater than 10 Gloss Units (GU) at 60° and greater than 35 Gloss Units (GU) at an 85° angle when measured using a gloss meter.

Non-Woven Fabric Backings

The substrate built into the wallcovering as a mixture of long fiber cellulose pulps and textile fibers combined with binders. Non woven wallcovering provide a substrate that is dimensionally stable when wet thus allowing a 'paste the wall' technique to be used for hanging.

Osnaburg

Woven fabric, coarse, heavy cloth, usually cotton, used as a backing in Type II vinyl coated fabric wallcovering and used mostly in medium to heavy usage areas.

Overspray

The paint that did not hit the intended surface during a spray application. This can appear as small raised specks around the area sprayed, and can give a halo effect on smooth surfaces.

Over-Trimming

A result of too much of the wallpaper being trimmed away. When an excess amount of material has been trimmed away, there is no way to compensate for the missing pattern. If it is noticeable at a glance or is unacceptable, you should return the wallpaper to the retailer for replacement.

Paint

Any pigmented liquid, liquefiable, or mastic composition designed for application to a substrate as a thin layer which is converted to an opaque solid film after application. Used for protection, decoration or identification, or to serve some functional purpose, such as filling or concealing surface irregularities.

Paper Backings

Material used on paperbacked vinyl, vinyl coated papers and specialty products as in paper water colors, silk and linen.

Paste the Wall

This is a technique where pasting material is applied directly to the wall before wallcoverings are hung.

Primer

The first coat of a painting operation.

Railroading or Horizontality

(horizontal) measured or operating in a plane parallel to the horizon.

Runs

Narrow downward movement of a paint film resulting in an irregular surface.

Sealer

A liquid composition that prevents excessive absorption of finish coats into porous surfaces thus helping to even the gloss of subsequently applied coatings.

Sealers

Sealers are usually formulated to be high in resins and low in pigment content. They do not only provide “tooth” or “key” for the final paint, but they also provide enamel hold out which will not diminish the angular sheen of the paint. Sealers that are spray-applied are recommended to be immediately back roll keeping a wet edge (helps provide a mechanical bond).

Scrim

Woven fabric, plain durable and usually cotton used mostly in light construction or light usage areas.

Shading

Variation created in the manufacturing process in the color, texture or gloss within the same strip of a wallcovering.

Shadowing

Being able to see the preceding coats through the last coat. Often related to opacity or hiding properties of the last coat.

Sheen

An attribute of object mode of appearance, which is similar to luster; gloss with poor distinctness-of-image reflectance. In the paint industry, the term sheen is used when the gloss is measured at a 85° off the perpendicular. Sheen is therefore frequently evaluated in terms of gloss measurements made on an 85° gloss meter. Not infrequently, there are coatings that are high in sheen, but have a low gloss when illuminated and viewed at or near the perpendicular.

Shiner

A spot glossier than the rest of the area. Sometimes caused by spot sealing patched areas before applying finish and by lapping of paints not having proper wet edge.

Skim Coat

The last step in a Gypsum Board Level 5 Finish. Either a thin coat of joint compound applied at a trowel consistency, or a material manufactured specifically for this purpose and applied in accordance with manufacturer’s recommendations. Both materials are applied over the entire surface.

Solids

Nonvolatile portion of paint including the binder and pigments.

Spatter

Small partials or drips of liquid paint thrown or expelled by centrifugal force when applying paint with a roller.

Specification

- a. A set of instructions detailing the method of surface preparation and coating application, and the coating to be used for completion of a project.
- b. A series of tests used to determine or confirm the quality of a coating. See also Standard.
- c. In construction, a clear accurate description of the technical requirements (for contract purposes) for materials, products, or services. This description specifies the minimum requirements for quality and construction of materials, equipment and required workmanship for an acceptable product, as shown by the related drawings. In general, specifications are in the form of written descriptions, drawings, prints, commercial designs, industry standards and other descriptive references.

Spot Priming

A method for protecting localized spots. The area spot primed are those that require additional protection due to rusting or peeling of the former coat or newly patched or repaired substances requiring a primer and or a sealer.

Spray Pattern

The shape of a spray fan as it strikes a surface. Spray guns are often configured for either round or flat patterns.

Standard

Something established for use as a rule or basis of comparison in measuring or judging capacity, quantity, content, extent, value, quality, etc. The type, model or example commonly or generally accepted or adhered to; criterion set for usages or practices.

Substrate

A variant of substratum. In painting, any surface to be painted, including wood, concrete, masonry, steel, other metals, and various other materials or previous paints. A substrate can, therefore, be bare or covered. A previously unpainted surface sometimes is called the "original substrate."

Texturing

A surface decoration over the entire gypsum wallboard surface, regular or irregular patterns typically produced by applying joint compound or a propriety texture material to a surface previously coated with an undercoat material. Referred to as gypsum board or drywall texture.

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

Tooth

The property which aids in adhesion of a subsequent applied coating.

Topcoat

The coating intended to be the last coat (or finish coat) in a coating system. Usually applied over a primer, undercoater, surfacer or intermediate coat, and is formulated for appearance and/or environmental resistance.

Touch-Up (Touch-Up Painting)

The act of repainting, by application of similar coating (i.e. from the uppermost coat e.g. primer, topcoat or finish coat preferably from the same batch), to restore small areas of a painted surface to an integral or unbroken condition (to meet the definition of a "Properly Painted Surface") by the application of paint or coating. Touch up is specifically defined as the repair of application defects and is distinct from damage repair and latent damage repair.

The appearance of a touch-up should not be noticeable because of application method, color, gloss, sheen or texture differences from adjacent area not touched-up. If noticeable, corner-to-corner or break-to-break repainting is necessary.

Type I

Light duty commercial grade wallcovering weighing between 7 and 13 ounces per square yard. Generally produced on a scrim or non-woven backing.

Type II

Medium grade commercial wallcovering weighing between 13 and 22 ounces per yard. It is produced on an osnaburg, drill, or non-woven fabric backing.

Type III

Heavy duty commercial grade wallcovering, weighing in excess of 22 ounces per square yard. Usually produced on drill fabric backing.

Uniformity

Not varying in gloss, sheen, color, hiding or other property.

Verticality – (Vertical)

At a right angle to the plane of the horizon; upright, straight up or down, etc.; upright position.

Volume Solids

The volume of the non-volatile portion of a composition divided by the total volume of the coating and expressed as a percent. The volume solids can be used to calculate dry film thickness at a defined spreading rate or spreading rate at a defined thickness. High volume solids mean a thicker dry film with improves durability and lower VOCs.

Wallcovering, syn. Wallpaper

Any type of paper, vinyl, fabric or specialty material that is pasted onto a wall or ceiling for decoration and/or protection. Wallcovering comes in a wide array of colors, patterns, textures and performance characteristics, such as washability and abrasion resistance.

Washability

The ability of a paint to be easily cleaned without wearing away.

WFT

Wet Film Thickness.

White Edge

A common problem that is especially evident when installing dark colored background wallcovering because the edges show white when butted together.

White edges are caused when the steel at the factory is either dull or is slightly tilted towards the center of the strip. The edges, prior to installation, are actually beveled leaving the substrate or backing of the wallpaper exposed at the edge. When two strips are joined together this problem is magnified. After installation, color white seams with colored chalk or permanent water colors of a similar color to the background of the paper. If either of these remedies are unacceptable, the remaining wallpaper should be returned to the supplier for replacement. **Note:** seams may be apparent after the installation process due to expansion/contraction factors inherent to the installation process and are not manufacturer's defects.

REFERENCED DOCUMENTS

ASTM Standards

- ASTM C11 – Terminology Relating to Gypsum and Related Building Materials and Systems
- ASTM C840 – Standard Specification for Application and Finishing of Gypsum Board

Dictionaries

Webster's New World Dictionary of the American Language, Second College Edition, New York: Warner Books, Inc., 1983

Gypsum Association Documents

- GA 214 – Recommended Levels of Gypsum Board Finish

MPI Documents

The Master Painter's Glossary Version 4.0

PDCA Standards

- Painting and Decorating Craftsman's Manual and Textbook, Fifth Edition, 1975
- PDCA P1 – Touch-Up Painting and Damage Repair
- PDCA P4 – Responsibility for Inspection and Acceptance of Surfaces Prior to Painting and Decorating
- PDCA P5 – Benchmark Sample Procedures for Paint and Others Decorative Coating Systems
- PDCA P6 – Acceptance of Completed Wallcovering

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- Painting and Decorating Contractors of America (PDCA)
- Wall and Ceiling Conference (WCC)

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