

Product and Systems Technology

Recommendations for Mixing and Applying the USG™ Decorative Interior Finish System

PM12

Description

Integrally colored finishes without painting are becoming more and more popular. They can be produced using the USG™ decorative interior finish system, which is a gypsum-based finish system utilizing veneer plasters from United States Gypsum Company. The extensive design options are described in the promotional brochure P759, “USG™ Decorative Interior Finish System,” and color formulas for twelve basic colors are shown in P761, “Color Formulas.”

This system can be applied over properly prepared drywall substrates, basecoat plasters and existing surfaces which have been identified as sound, bondable and properly cleaned, each treated with USG™ plaster bonder—clear. The USG decorative interior finish system utilizes a USG veneer plaster product, usually DIAMOND® veneer finish, mixed with appropriate colorants (depending on the selected color) and water, applied to a wall or ceiling surface and textured as desired, and then sealed with USG decorative interior finish sealer.

USG offers several combinations of substrate and USG decorative interior finish. The basic system consists of a drywall substrate with joints taped, fasteners filled and one additional coat of joint compound on flat joints; SHEETROCK® brand wallcovering primer is applied to the joint compound; USG plaster bonder—clear is applied to the entire surface. USG decorative interior finish, using DIAMOND veneer finish mixed with the selected Colortrend® colorants as the colored finish, is then applied; after drying, the surface is sealed with USG decorative interior finish sealer.

Additionally, there are three optional combinations of substrate and the USG decorative interior finish system available. All four USG decorative interior finish systems are described in the table below, but a more comprehensive description of the three optional systems are as follows:

1. Use the same substrate and surface preparation as above, but use IMPERIAL® veneer basecoat, DIAMOND® veneer basecoat or IMPERIAL® veneer finish in the finish/colorant mix instead of DIAMOND veneer finish; after drying, the surface is sealed with USG decorative interior finish sealer.
2. Use IMPERIAL® gypsum base as the substrate, with joints taped and one coat of IMPERIAL veneer basecoat or DIAMOND veneer basecoat; USG plaster bonder—clear is applied to the entire surface. USG decorative interior finish, using DIAMOND veneer finish as the finish, is then applied; after drying, the surface is sealed with USG decorative interior finish sealer.
3. Use the same substrate and surface preparation as above, but use IMPERIAL veneer basecoat, DIAMOND veneer basecoat or IMPERIAL veneer finish in the finish/colorant mix instead of DIAMOND veneer finish; after drying, the finish is sealed with USG decorative interior finish sealer.

USG Decorative Interior Finish Systems

Gypsum Base	Joint Reinforcement	Primer/Basecoat	Bonder	Colored Finish Coat	Sealer
SHEETROCK gypsum panels	SHEETROCK joint tape & compound with one added coat over flat joints	SHEETROCK wallcovering primer over joints and trims only	USG plaster bonder—clear over entire surface	DIAMOND veneer finish	USG decorative interior finish sealer
SHEETROCK gypsum panels	SHEETROCK joint tape & compound with one added coat over flat joints	SHEETROCK wallcovering primer over joints and trims only	USG plaster bonder—clear over entire surface	DIAMOND veneer basecoat or IMPERIAL veneer basecoat or IMPERIAL veneer finish	USG decorative interior finish sealer
IMPERIAL gypsum base	IMPERIAL tape, pre-filled and allowed to set using DIAMOND veneer basecoat or IMPERIAL veneer basecoat ¹	Apply one coat of DIAMOND veneer basecoat or IMPERIAL veneer basecoat ²	USG plaster bonder—clear over entire surface	DIAMOND veneer finish	USG decorative interior finish sealer
IMPERIAL gypsum base	IMPERIAL tape, pre-filled and allowed to set using DIAMOND veneer basecoat or IMPERIAL veneer basecoat	Apply one coat of DIAMOND veneer basecoat or IMPERIAL veneer basecoat ²	USG plaster bonder—clear over entire surface	DIAMOND veneer basecoat or IMPERIAL veneer basecoat or IMPERIAL veneer finish	USG decorative interior finish sealer

(1) Under certain conditions, joint tape and SHEETROCK setting-type joint compound (DURABOND®) should be used to reinforce the joints prior to basecoat application.
(2) Apply over the entire surface to provide a uniform basecoat application; basecoat surface to be left under the trowel, not rough and open (as is normal in standard veneer plaster finish coat applications).

Specifications

Installation should meet all requirements for drywall or gypsum base application and joint treatment preparation as described in SA927 "Gypsum Panels and Accessories," and "Gypsum Construction Handbook."

Materials

Gypsum Panels: SHEETROCK® gypsum panels.

Joint Treatment: SHEETROCK® joint tape and any SHEETROCK® setting-type, lightweight setting-type, ready-mixed (drying-type) or powder (drying-type) joint compound. Note that all joint treatment must be dry before SHEETROCK wallcovering primer is applied and the primer must be dry before USG plaster bonder is applied.

Gypsum Base: IMPERIAL gypsum base.

Veneer Plasters: DIAMOND veneer finish, IMPERIAL veneer basecoat, DIAMOND veneer basecoat or IMPERIAL veneer finish.

Sand for Float Finishing: Graded white silica sand.

Colorants: USG does not manufacture or supply colorants for use with DIFS. Use of colorants other than those recommended may alter set times and could produce unacceptable color variations and other issues. The USG decorative interior finish system is intended only for pastel and earthtone colors. USG recommends using Colortrend® Ambiance™ Formulations and Colortrend® 888 Universal Machine Colorants. Colortrend Ambiance color formulations are designed for one-gallon paint formulations. When mixed with plaster, they produce a total of five gallons of mix, and will produce colors that are close matches to those colors shown in product brochure P759, "USG Decorative Interior Finish System."

Note that the mixed colors from the Colortrend Ambiance color formulas shown in P759 will appear darker in the "wet state," that is, when mixed as the wet plaster. However, the finished color will become lighter when the finish has set and dried, and will produce the selected finished color. When set and dried, the colors will closely match the colors shown in P759.

Final selection of color should only be made based on the preparation of a minimum 28" x 28" sample matching gloss, texture and application technique of the project. This sample is required to illustrate the final finished surface appearance. Colors may vary because of degree of gloss, texture, size and shape of area, lighting and the nature of a hand-troweled application. See the footnote on page 3.

Custom Colors: Color formulations that will provide colors beyond the twelve basic color formulas for the colors shown in P759 are available using the Colortrend Ambiance fan deck color selector and color formula book. It should be noted that the USG decorative interior finish system is only intended for pastel and earthtone colors. To create a custom color, select a color and formula from the fan deck and color formula book that represents a color somewhat darker than the color you desire as the finished, dried, surface color. Note that the shade of finished colors is dependent on many factors. Each color formula yields a slightly different degree of color lightness compared to the color swatch depicted in the fan deck selector. The texture applied and the consistency of the mixed mortar also effect the appearance of the finished surface, and therefore the color. Even the plaster product chosen (DIAMOND veneer finish, IMPERIAL veneer basecoat, DIAMOND veneer basecoat or IMPERIAL veneer finish) for the mix can vary the resulting shade. Depending on these factors, the final dried finish can be up to several shades lighter than the color swatch depicted in the fan deck selector. Note also that when wet, the wet mixed mortar appears darker than the selected color swatch, but will lighten in color when set and dry.

An alternative method of creating a custom color is to increase the amount of colorant in the chosen color formula; however, do not use more than a maximum of 12 ounces of colorants. More than 12 ounces will deteriorate plaster finish properties and will not necessarily darken the finish product. The finish material properties that may be affected by too much colorant in the mix are low strength, softness and extended set time.

USG recommends using only Colortrend 888 Universal Machine Colorants. Colorants from other manufacturers are not recommended since they may not be compatible with USG materials, they may cause color variations and they may interfere with the intended product application. We recommend only the use of Colortrend 888 Universal Machine Colorants, the basic USG color formulas with these colorants and custom colors created using the Colortrend Ambiance Fan Deck Selector.

When using Colortrend 888 Universal Machine Colorants to create colors from the fan deck selector, or when using other colorants, make up a sample before mixing a full batch. The color of the completed plaster surface may not accurately match the color in the fan deck color selector. A minimum 28" x 28" sample matching gloss, texture and application technique of the project is required to help illustrate differences between the application and the fan deck color selector.

Application of USG decorative interior finish system Over a Drywall Base

SHEETROCK gypsum panels should be hung in accordance with USG specifications. SHEETROCK® paper reinforcement tape should be applied to all joints, using any USG joint treatment system, followed by one cover coat of a USG joint compound product on all beads, trims, nails, screws and joints (tapered joints, single wide width; butt joints, double wide width). Inside angles should be left with no additional coats of joint compound.

When the joint compounds are set and dry, ridges, trowel marks and other waste material should be removed from the surface to provide a smooth surface for application of additional finish products.

Wood trim, base, casings and cabinets should be installed and finished. All wood trim, cabinets and adjacent surfaces not to be treated with the USG decorative interior finish system should be masked and covered to protect these surfaces from staining.

Apply SHEETROCK wallcovering primer to all joint compound-treated surfaces, to prevent uneven suction in these areas. USG plaster bonder—clear should be next applied over the entire area to be treated, following the directions on the container.

Finish Preparation—Mixing

The wall or ceiling is now ready for the mixing and application of USG decorative interior finish. All areas should be free of direct air flow to protect against dry-out of plaster prior to set. The application of finish is best achieved using a crew of six for the most efficient and economical installation: two people will mask, unmask and clean up trim and surrounding areas; one person will mix the finish material; two people will apply the material and do the initial knock-down troweling; and one person will do the final finish trowelings. The applicators or finisher also will spray on the sealer.

The USG decorative interior finish usually consists of DIAMOND veneer finish mixed with colorants and water; however, the following veneer plaster products can also be used: IMPERIAL veneer basecoat, DIAMOND veneer basecoat or IMPERIAL veneer finish. Mixing is done in a five-gallon pail (14" high, 10 -1/4" bottom, 11-1/4" top). Note that the same color formulation will change in depth and hue when a different plaster material is used.*

Subsequent mixes are prepared to supply mechanics with material on a continuous basis. Water is added to each pail in a carefully measured amount, as follows: For DIAMOND veneer finish, 6-1/2" of water is required per batch; for DIAMOND veneer basecoat, 4-1/2" of water is required per batch; for IMPERIAL veneer basecoat, 4" of water is required per batch; and for IMPERIAL veneer finish, 5" of water is required per batch. Use a ruler or pre-marked stick to measure the water for each batch; this measuring is very important for color consistency.

Colorant is added to water using a predetermined Colortrend® formula. Water and colorant should be mixed briefly to ensure uniformity. Using a heavy-duty 450-rpm drill with a drywall blade-type joint compound paddle, turn the drill on and off several times to disperse the colorant in the water without splashing and loss of colored mixing water. Any loss will cause color variation in the finished material. Slowly add the material being used (DIAMOND veneer finish, approximately 40-45 lbs.; DIAMOND veneer basecoat or IMPERIAL veneer basecoat, approximately 60 lbs.; IMPERIAL veneer finish, approximately 50 lbs.), mixing for two to five minutes using a heavy-duty 450-rpm 1/2" drill with a drywall blade-type mixing paddle. The technique for adding the material to the bucket is done by volume rather than actual weight and should be conducted as follows: Fill the bucket to the top with the material; then, using the drill and mixing paddle, turn the drill on and off several times to dampen the material. The bucket is again filled with material and the contents mixed in the same manner. This is repeated until the proper amount of material has been added and mixed thoroughly. Normally, three additions will be necessary. The finish should be mixed to a slightly thicker than normal consistency, increasing or decreasing the amount of dry material being used accordingly. *It is important that all mixes are of the same consistency to ensure color uniformity throughout the project. Mixing is done by volume rather than by exact weight to ensure color uniformity. Mix each batch to the same fluidity in a specific volume container. The fluidity can be measured using a margin trowel to note the thickness of the mortar. Proper consistency is attained when the material just slides off a margin trowel.*

Note: If it is desirable to add fine silica sand to the mixture, add up to one volume (a measured three-pound coffee can or equivalent) of fine silica sand meeting ASTM C35 to each batch of USG decorative interior finish using either DIAMOND veneer finish or IMPERIAL veneer finish. Sand should be added after material has been mixed to a near desired fluidity in a consistent manner to ensure color uniformity throughout the project. This quantity of sand will not change the fluidity of the mixture.

*The color of the completed plaster surface may not accurately match the color in the fan deck color selector. Color may vary because of degree of gloss, texture, size and shape of area, lighting and nature of hand-troweled application; even heat and light exposure will affect the color. A minimum 28" x 28" sample matching gloss, texture and application technique of the project must be prepared to help illustrate differences between the application and the fan deck color selector.

Application of Finish

The initial application of the USG decorative interior finish is done by one or more plasterers, who, depending on the size of the wall or ceiling to be treated, will work together to cover a large area, or will work separately on smaller surfaces. It is important that each wall or ceiling be covered in a continuous application, and that plasterers are careful to always continue joinings of separate mixes prior to either mix setting. Each wall and vaulted ceiling should be treated from top to bottom, and from angle to angle. Each ceiling should be treated from angle to angle in a consistent manner.

Many textures are possible using this system. Examples described in this PM sheet are a semi-smooth one-coat texture using either DIAMOND veneer finish or IMPERIAL veneer finish and a two-coat heavy texture using any USG veneer plaster product; there are many other textures possible.

Work should be planned to provide efficient movement of labor and equipment from area to area. Work should begin on a ceiling at a chosen starting point and the ceiling should be plastered from angle to angle. For a one-coat semi-smooth texture, the plaster should be applied in short strokes of approximately one to two feet, in random directions, leaving lap marks and voids as desired, to a nominal thickness of 1/8" (minimum 3/32"). The entire substrate should be covered with this application.

The material should be left undisturbed at this point until the surface has firmed slightly (approximately twenty minutes after initial application). The surface should now be drawn over lightly, with a clean trowel held almost flat to the surface. The trowel should be kept clean and damp by the flat troweling technique. Water should not be added; however, wiping off build-up with a damp cloth or brush may be necessary to keep the trowel surface clean. Excess water use at this stage will cause discoloration. Troweling should be done with short strokes in various directions, knocking down lap marks and bumps to the desired smoothness. The material should again be left undisturbed until initial set has started (about forty-five minutes after initial application). The initial set is seen by a color change (or browning out) in various places on the plaster surface. At this time, the surface should again be drawn over lightly with a clean trowel in various directions to further finish the surface. Again, the trowel should be kept clean and damp as described above. However, do not water-trowel or use water directly applied to the surface. When the entire surface has set, a final (or third) troweling should be done in the same manner as previously described. However, a minimal amount of water may be used to help burnish the surface and enhance the finished color. [Caution: Use of any water at this point is only needed to maintain a damp surface. This is the only point in the application when it is acceptable to use any water at all in the troweling.] The amount of water should be controlled, such as by misting lightly with a water bottle. Water added at this point must be immediately absorbed by the surface, avoiding any drips or runs.

For a two-coat heavy texture, the first coat of the finish should be applied to a nominal thickness of approximately 1/8" in the manner previously described, keeping lap marks and voids to a minimum. When approximately half of each batch is applied, material from the same batch should be used to apply the second coat of finish. This coat should be applied to a varied thickness of 1/8" to 1/4" using short strokes of approximately one to two feet, leaving lap marks and voids as desired to create a heavy texture.

When using DIAMOND veneer finish or IMPERIAL veneer finish in the USG decorative interior finish system for a two-coat heavy texture, additional drawing up and troweling of finish should be done in the same manner as a one-coat semi-smooth finish.

When using DIAMOND veneer basecoat, IMPERIAL veneer basecoat, job-sanded DIAMOND veneer finish or job-sanded IMPERIAL veneer finish in the USG decorative interior finish system, the material should be applied in the manner previously described for a two-coat heavy texture, but drawing up additional trowelings should be omitted. Many textures are possible using these veneer plaster products. The following are among the possible textures: Monterey, Spanish, heavy or light lace, deep relief, stipple, combed, and trowel-fan pattern.

All tools and mixing equipment should be cleaned with water prior to material setting.

Application of Sealer

Once the surface has set and is sufficiently dry (approximately twenty-four hours after application), it is ready to receive USG decorative interior finish sealer. Prior to application of the sealer, undesirable blemishes, crumbs, blisters and light ridge marks can be removed using 200-grit or finer sand paper or a sanding block. After sanding, wipe down with a clean, damp cloth to remove excess dust on surface. During application of USG decorative interior finish sealer and for at least 48 hours thereafter, the air temperature must be at least 55 °F (13 °C).

With proper moisture removal, the gypsum-based finish surface should be dry enough to apply the sealer in as little as 24 hours after its application. No obvious signs of wetness should exist on the gypsum-based finish surface.

USG decorative interior finish sealer comes ready to use. The product should always be hand stirred prior to use to compensate for any settling. Never shake or box-mix, as this may entrap air bubbles. It is preferred that USG decorative interior finish sealer be applied using low-pressure airless spray equipment, but it may be roller-applied if non-critical light conditions exist and care is taken to back-roll treated areas in one direction. When using low-pressure airless spray equipment, the product should be applied using a tip no smaller than 0.015" or larger than 0.023". Hold the spray tip approximately 12" to 18" from the surface to be treated using a fanning motion at the end of each horizontal pass. When the entire surface has been treated, immediately re-coat the surface in the same manner, with strokes perpendicular to the (vertical) initial application. Initially, USG decorative interior finish sealer's emulsified resin appears milky white. The emulsified resin will eventually coalesce (fuse together) and dry clear and colorless. Any undesirable drips or puddles on the surface should be wiped immediately with a soft, absorbent, lint-free cloth to provide a uniform coating.

Mixing containers and tools should be cleaned after use, using warm water. Store any unused material in a tightly sealed container.

Application of USG Decorative Interior Finish System Over Imperial Gypsum Base and Veneer Plaster

Hang the IMPERIAL gypsum base in accordance with USG specifications. Apply IMPERIAL glass fiber mesh tape or SHEETROCK joint tape, depending on application conditions. See PM-5 "Veneer Plaster Joint Reinforcement Systems" for more information. Apply one coat of IMPERIAL veneer basecoat or DIAMOND veneer basecoat; the application should be left under the trowel and not broomed or brushed to create a rough open surface (as is the normal condition for the direct application of a finish coat); after the basecoat plaster has set and is dry, apply USG plaster bonder—clear, to the entire surface. Apply USG decorative interior finish and USG decorative interior finish sealer as indicated in "Application of Finish" and "Application of Sealer" above.

Trademarks

The following trademarks used herein are owned by United States Gypsum Company: DIAMOND, DURABOND, IMPERIAL, SHEETROCK, USG, USG in stylized letters. Colortrend and Ambiance are trademarks of Creanova, Inc.

Note

Products described here may not be available in all geographic markets. Consult your U.S. Gypsum Company sales office or representative for information.

Notice

We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

Safety First!

Follow good safety and industrial hygiene practices during handling and installing products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read material safety data sheets and related literature on products before specification and/or installation.

