

# Product and systems Technology

## Acoustical Plaster Finish Application Tips

### PM18

USG® acoustical plaster finish ceiling spray is a natural white, spray-on texture finish plaster. It provides a sound-rated, decorative finish for interior use on basecoat plaster, concrete, metal deck and gypsum panel ceilings. USG acoustical plaster finish is for use on noncontact surfaces only. It contains no asbestos.

USG acoustical plaster finish is a gypsum-based setting-type product and not a conventional drying-type simulated acoustic texture. For successful, trouble-free application, all product directions must be followed, and recommended equipment must be used.

This tip sheet highlights some of the recommended procedures for achieving the best results with USG acoustical plaster finish. It is not intended to include all directions, limitations and cautions. Before specifying and using USG acoustical plaster finish, refer to publication P720 USG acoustical plaster finish for complete information.

### Preparing for the Job

#### Inspect Construction

1. Gypsum basecoat application shall comply with system design and application in accordance with specification outlined in publication SA920 Plaster Systems. Surfaces should be left rough and open to receive a finish while meeting the contour as identified in the specification for the intended application and installation.
2. Make sure that the substrate is clean, dry, sound, and free of oil, grease, efflorescence, contaminants and water-soluble materials. Prime the surface according to "Surface Preparation Directions" in publication P720. On retrofit jobs, some substrates may contain or be coated with contaminants or migrating materials that will not respond to standard surface preparation methods, and surface staining of the finish may occur. In such situations, a light spray coat of SHEETROCK® First Coat primer over the dried USG acoustical plaster finish will be required to improve the surface color. (There will be minimal loss in NRC value. Test a small area to determine effectiveness of spray coat of paint). Accordingly, in retrofit jobs, a finish coat of paint should be included in the bid. If an encapsulant will be used, contact United States Gypsum Company to determine whether USG acoustical plaster finish is recommended for application over the specific substrate encapsulant.
3. Previously painted metal decking must be stripped to bare metal prior to application of USG acoustical plaster finish bonding agent to ensure adequate bond. Apply undiluted bonding agent to metal roof decking. Coverage of the bonding agent will be approximately 400 ft.<sup>2</sup>/gal. Bonding agent may be spray-applied with an airless sprayer using a 60 mesh filter and 0.017" tip; it may also be roller-applied. Bonding agent must be allowed to dry before application of the finish. The bonding agent will go through a color change during the drying process. Initially, the applied bonding agent will be white; it will then change to blue, and will become clear when dry. Drying time is approximately 6 to 8 hours.
4. Ensure that gypsum panel ceiling systems meet standard framing requirements for USG acoustical plaster finish per publication P720.
5. Surface irregularities will "mirror" or "photograph" through the finish. Level offsets and irregularities prior to the finish application with either SHEETROCK® setting-type joint compound or USG acoustical plaster finish.

### Material Mixing

#### Choose Equipment

Use the appropriate equipment to spray the job. The following are minimum-size pumps for USG acoustical plaster finish application: A large pump (2L4 roto-stator, or a Grover 8:1 piston pump) or peristaltic pump (1 in. i. d.) is required to rapidly apply the acoustical plaster finish. Match an air compressor to the length of the material hose, ensuring that it has sufficient capacity. For mixing, use a 7 cu. ft. or larger paddle-type plaster mixer with rubber-tipped blades (Anchor mixer) with horizontal shaft. Mixing with standard drill and plaster paddle is **not recommended**, the plaster consistency will be compromised.

*Note: Self-contained integral mixing/pumping units are not recommended for applying USG acoustical plaster finish.*

**Preventing Finish Material From Packing in the Hose**

**Precondition Pump and Hose**

1. Make sure that all pumps and hoses have been properly primed before start of spray application of USG acoustical plaster finish. Clean pumps and hoses first with water, followed by 1 gallon of SHEETROCK® ready mixed joint compound in the material reservoir of the pump. Pump until compound feeds into the hose. Immediately stop the pump. Dump mixed USG acoustical plaster finish into the material hopper for spraying. The joint compound is used to separate the priming water from the USG acoustical plaster finish.

**Check Hose Condition**

2. Check any line splices and connectors in the hose. These are sites where polystyrene can pack up and restrict flow. Use a minimum length material hose with no line splices if possible. The probability of pumping problems increases with the length of the hose. Improper connections also can result in blockage. Hose connections must not significantly reduce the hose's interior diameter.

**Make Sure that Spray Tip Is Unrestricted**

3. Check the spray nozzle for clumps of material that could cause a backup.

**Shut Down Pump Before Shutting Down Material Flow**

4. Be sure that correct procedures for shutting down the spray process are being followed. Always shut down the pump first, bleed off the material feed pressure, and then shut off the main material flow valve. Shutting off the valve first causes excessive pressure buildup in the hose and gun, which will cause clogging.

**Ensuring Smooth Pumping of Material**

**Use Foamy Mix**

1. Check the wet mix. Initial mix will appear dry and heavy; continue to mix until finish is thick and foamy (the foam makes pumping easier). Add water to thin the mixture only as a last resort. Periodically agitate the mixture to retain foamy, smooth pumping consistency.

**Reduce Down Time**

2. Do not let material sit in the hose for longer than 30 minutes, maximum, because the product defoams as it sits, and becomes difficult to restart. If longer breaks are needed, flush out the hose with water and then restart.

**Check Hose**

3. Examine the hose. Use a minimum length material hose with no line splices or connectors, if possible, to reduce back pressure and ease pumping.

**Make Sure Spray Tip is Unrestricted**

4. Check for lumps in the spray nozzle that could restrict the flow.

**Preventing Material from Setting Up in the Equipment**

**Apply Material Rapidly**

1. USG acoustical plaster finish is a gypsum-based setting-type product that will harden and set. Apply product within 3 to 4 hours of initial mixing with water.

**Do Not Reuse Sprayed Material**

2. Do not recycle material that has been pumped (such as wipedown or initial flushes of material). The pumping process accelerates the set time. If recycled material is mixed with fresh product, the material will set faster than normal, and may harden in the equipment. The practice of recycling sprayed material may also result in bond failure and unsatisfactory surface matrix hardness.

**Reducing Bounce-Back**

**Expect Some Fallout**

1. During the first spray pass over any substrate, bounce-back will be excessive because the USG acoustical plaster finish is hitting a hard surface. This is normal. During subsequent coats, the application will result in less bounce-back.

**Adjust Spray**

2. Reduce air pressure, adjust air spike, and change nozzle orifice as necessary to promote good atomization. Avoid excessive air pressure.
3. Balance material flow and atomization to eliminate material shooting from the gun in a lateral direction (in this situation the material cannot reach the ceiling and will wind up on the floor).

**Achieving Good Bond of Finish to Substrate**

**Check for Substrate Coating**

1. Basecoat plaster application surfaces must be rough and open to ensure proper bond of finish.
2. Check substrate for previous coatings. If surface was previously painted with a "hard shell" finish, such as an oil based paint or a semi-gloss or gloss latex paint, sand surface with 80-to-100-grit sandpaper or sandblast the surface, and then apply a prime coat. The prime coat shall consist of SHEETROCK® First Coat primer and flat, rust-inhibitive primer over exposed metal.



3. Do not use this product over surfaces previously coated with any epoxy-type paint, as poor wet- and dry-bond will occur.
4. Previously painted metal decking must be stripped to bare metal prior to application of USG acoustical plaster finish bonding agent to ensure adequate bond. Apply undiluted bonding agent to metal roof decking. Bonding agent must be allowed to dry before application of finish.

#### **Adjust Wet Mix**

5. The mix may be too wet to adhere properly. If the pump can handle the load of a drier slurry, reduce the water content of the mixture.

#### **Adjust Spray**

6. Move the air spike and adjust the air pressure to increase atomization. The extra air will allow the material to be applied with greater force, thereby increasing contact and improving surface bond.

### **Applying a Uniform, Even Finish**

#### **Pretreat Offsets**

1. Surface irregularities will "mirror/photograph" through finish. Level offsets/irregularities prior to finish application with either SHEETROCK® setting-type joint compound or USG acoustical plaster finish.

#### **Apply Uniform Amounts of finish**

2. Maintain a consistent mix method and consistent viscosity control.
3. Apply the finish in wide, even sweeps.
4. Apply the finish in finer coats. Be sure to cross-hatch coats.
5. Apply a light coat of finish after all the major spraying is completed, to improve and unify the overall appearance.
6. Obtaining an even finish is especially critical for large rooms.

#### **Maximize Coverage Rate**

7. Check the spray pattern. Adjust it as necessary to reduce bounce-back.
8. Check the thickness. (There may be more material on the ceiling than is apparent. Average many readings to be sure.)
9. Actual coverage may vary depending on factors such as condition of substrate surface, amount of product dilution, spray techniques and uniformity of coating.
10. A 1" thickness must be applied in two 1/2" coats to ensure increased sound rating.

### **Achieving a Uniform Finish Color**

#### **Prepare Substrate**

1. Be sure that the surface is clean, dry, sound, and free of oil, grease, efflorescence, contaminants and water-soluble materials. Apply a prime coat per publication P720 for USG acoustical plaster finish.  
Although primers are not intended to prevent migration of stains or contaminants to the finished surface, they are needed to equalize surface porosity and provide a uniform color base. On retrofit jobs, some substrates may contain or be coated with contaminants or migrating materials that will not respond to standard surface preparation methods, and surface staining of the finish may occur. In such situations, a light spray coat of SHEETROCK First Coat primer over the dried USG acoustical plaster finish will be required to improve the surface color. (There will be minimal loss in NRC value. Test a small area to determine effectiveness of spray coat of paint.) Accordingly, in retrofit jobs, a finish coat of paint should be included in the bid, and may be eliminated if the surface is acceptable on drying.

#### **Apply Uniform Amounts of finish**

2. Apply a minimum thickness of 1/4" of finish. Less than this thickness will not set properly and may result in color variation.
3. Apply the finish evenly. Uneven thicknesses usually dry at different rates and have different texture patterns that appear as color variations.
4. Elimination of spray lines and section seams is essential in producing an acceptable finish. If the entire ceiling area cannot be sprayed to the final thickness in one day, spray the entire surface with a material coat of a uniform, even thickness (minimum 1/4"). Complete the build-up to the final thickness the following day with a cross-hatched application to provide a uniform appearance. Do not spray a portion of a ceiling one day and the final portion on another day, as a noticeable seam line will result. Use natural breaks and boundaries to "frame" pattern edges and conceal seams.

#### **Expect Color Changes During Drying**

5. Be sure that the applied finish is dry before judging the color. Slight color variations that are present shortly after spraying disappear when the ceiling is completely dry. Usually, 3-5 days are required for the finish to dry. The product will dry whiter than the wet color.



## Avoid Ceiling Sag

### Inspect Substrate

1. Prior to application, examine the ceiling surface for sag. If a previous decorative texture finish was applied to a drywall system, the board already may have sagged. Subsequent recoating with this product is not recommended, because its application may result in additional—and objectionable—sag.
2. Make sure that gypsum panel assembly systems meet standard framing requirements for USG acoustical plaster finish per publication P720.
3. Ensure that the substrate is primed according to recommendations in publication P720.

### Apply Light, Dry Spray

4. Avoid using too much water in the mix. (This is a common mistake.) Excess water can soak the substrate and cause warp and sag. It is best to pump the finish at a very heavy but foamy consistency.
5. Do not exceed 1/2" maximum thickness over gypsum drywall.

### Maintain Proper Drying Conditions

6. Maintain a minimum air/water product mix, and substrate temperature of 55 °F (13 °C) during and after application. Avoid high heat/humidity conditions. Make sure that there is adequate ventilation after spraying is completed and until finish has completely dried.

#### Trademarks

The following trademarks used herein are owned by United States gypsum Company: SHEETROCK, USG, USG in stylized letters.

#### 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.

