



A HYBRID APPROACH TO

Lime Plaster

Drywall backing speeds the way to a textured, durable, old-world finish

BY ACE McARLETON

Traditional plastering is a slow, laborious process, so it's no wonder that when drywall came on the scene, it quickly replaced plaster as the go-to material for walls and ceilings in American homes.

But while drywall replaced plaster in function, it doesn't replicate the look, feel, and durability of hand-applied plaster. Unlike drywall, plaster is a truly custom finish that can be sculpted and troweled to any number of desired shapes and textures. One of my favorite types is lime plaster—a strong, environmentally friendly, beautiful finish that has been around for millennia.

Made of a mix of sand, lime, and water, lime plaster has a high index of refraction, giving surfaces a warm glow that subtly

changes color and tone as the sun shifts. The textures created by the sand and the plasterer's trowel work can add even more dimensions of interest.

By contrast, the flat, smooth finish that drywall is meant to achieve in much of the United States is, by design, one-dimensional. When texture is added, it often just mimics traditional plasters.

Still, we like drywall. It's a key component of our hybrid plastering approach, which takes advantage of some of drywall's efficiency, availability, and strength, and melds it with the beauty of true lime plaster. Depending on the details, complexity, and size of the project, this method of plastering runs from \$5 to \$9 per sq. ft. This approach is more labor intensive than standard drywall-

ing, but not nearly so laborious and costly as a standard three-coat plastering process.

Drywall replaces lath

Drywall provides a solid base for lime plaster, and goes up faster than the wood lath of the recent past. The drywall is hung in standard fashion, but it doesn't get taped, so we don't worry as much about the number of seams and can use shorter drywall panels, which makes it easier to estimate and hang.

Typically we use standard drywall, which is designed to tolerate wetting from drywall compound and water-based paint, and tolerates wetting from lime plaster much the same. We prime the drywall with a mixture of sand and Elmer's Glue-All (a PVA glue, which is similar to PVA-based primers). We



A WARM GLOW

Rich with texture, lime plaster has a high index of refraction that brings a subtle warmth to this Vermont home.

roll and brush this slurry on just like paint to give the wall some tooth to help hold the plaster. We haven't had issues with lime plaster failing on bare drywall, but taking this extra step is a cheap insurance policy, and it dries quickly.

On this job, the drywall contractor installed blueboard, which is made to serve as a base for veneer gypsum plasters. We've found that the extra expense of blueboard isn't necessary, but it doesn't hurt either.

The right mix is key

The lime plaster used here has two primary components: sand and hydrated lime. If you think about it like a brick wall, the sand is the brick, which provides the structure, and the lime is the mortar that holds it together. The



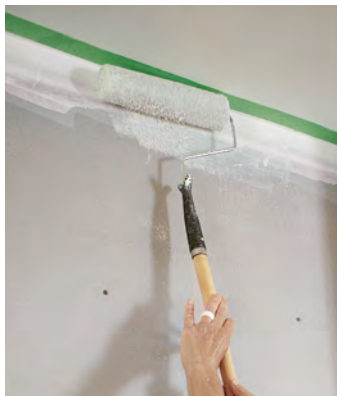
MASK, PRIME, MIX



Screed to tape. Use painter's tape to establish the thickness of the plaster, setting it to ¼ in. to ½ in. out from the wall on all of the trim, ceilings, and windows. The tape serves as rudimentary screed lines, and it protects adjacent surfaces from the mess of plastering.



Give it some tooth. Brush and roll a mix of sand and PVA glue onto the bare drywall to give it some tooth to help hold the plaster.



Master the mix. For this process, the ratio of hydrated lime to sand should generally be at least 1:2, but no less than 1:4. Wear a suitable respirator when mixing to avoid breathing in the lime.



Ball test. Form a ball of plaster. It shouldn't fall apart when tossed, and should stick to the inside wall of a wheelbarrow when thrown against it.

sand needs to be sharp and clean and have a variety of grain sizes, but none any larger than about one-fifth the thickness of the plaster layer. Larger grain sizes give the plaster a coarser texture; for smoother finishes, use finer sand.

For finish plasters, we typically use limestone sand because its light color creates a bright plaster, and Type S mason's lime, which is commonly found in 50-lb. bags from local building supply yards. Ask for the freshest bags—the longer the product might have been exposed to moisture and air, the less active the contents will be.

Getting the proportions of lime, sand, and water just right is critical to creating a durable plaster that will trowel on easily. For this process, the lime to sand ratio shouldn't be more than 1:2, or less than 1:4. The mix used here is one part Type S mason's lime to three parts sand. Add water a little at a time until the plaster can be formed into a ball that doesn't fall apart when tossed, and that sticks to the inside wall of a wheelbarrow when thrown against it.

It's better to add too little water at first than too much—too much water will cause hairline cracks to form as the water evaporates and the plaster shrinks. The less water, the less shrinkage. Still, water is needed to activate the lime and make a workable plaster. After mixing, give the lime 24 hours to activate—keeping it covered—before applying the plaster.

Unlike cement stucco or gypsum plaster, hydrated lime plaster sets only when exposed to air, and will stay soft indefinitely if kept sealed from it. This is distinct from hydraulic lime, which will even set under water.

Hydrated lime hardens in two ways—first by drying, but more importantly by curing, during which the hydrated lime absorbs carbon dioxide from the air and recrystallizes into limestone. The process of making lime from limestone drives off carbon dioxide, but because CO₂ is reabsorbed during the curing process, it's a desirable material for green building.

Trowels and textures

Coats of lime plaster need to be thin to absorb enough carbon dioxide to cure properly. When plastering over drywall, we use a single coat that's ¼ in. to ½ in. thick. To aid in getting the thickness right, we use painter's tape to set reference lines on the trim, ceilings, and windows. The tape serves as rudimentary screed lines, and protects adjacent surfaces from errant plaster.

The mechanics of getting plaster onto the wall and achieving the desired texture take practice, and would take volumes to explain, but there are some general guidelines. Lime plaster has a

PLASTER THE FIELD



Plasterer's setup. Set mortar boards at a comfortable height, and temper the plaster with spritzes of water as needed to maintain its consistency. Dedicate a worker to refilling mortar boards so the plasterers can focus on plastering.



Finish to finish. It's easier to mold wet plaster to solid trim than it is to scribe solid trim to rock-hard plaster, so install trim before plastering. Rabbet the backside of large wood trim and tuck plaster behind it to prevent gapping as the trim expands and contracts.



Get it on. Use two trowels to quickly pick up and transfer loads of plaster to the wall. When one arm gets tired, switch arms without switching tools. Square-edged plaster trowels are ideal for applying large amounts of plaster to the field of a wall or ceiling.

Smooth it out. Use a pool trowel to smooth the plaster without leaving tool marks behind. For added texture, smooth with a square-edged trowel first, then a pool trowel after the plaster has firmed up a bit.



Before it sets. Remove the tape scree lines while the plaster is still wet so it doesn't get trapped. If the plaster pulls away where it overlaps the tape, smooth it out with a small margin trowel or flexible Japanese trowel.

EASE OUTSIDE CORNERS



Two-trowel technique. Use two trowels—one to apply plaster, and one to hold material and catch drops—when working areas where the plaster has a harder time sticking, such as outside corners.



Fiber reinforcement. Reinforce inside and outside corners with drywall mesh tape to add strength and prevent cracking. Apply a layer of plaster, embed the tape, and apply more plaster to bury the tape.



Round it out. To ease outside corners, move the trowel from one plane to the next, keeping the trowel's trailing edge in contact with the surface to round it over.

long open time, which can be stretched out by tempering the plaster on the wall with spritzes of water—but do this with caution. Too much water can weaken the plaster and cause cracking. It's also important to not overwork the plaster, as the heat and friction generated by troweling can also weaken it.

Rectangular plaster trowels and round-edged pool trowels are best for getting lime plaster onto the field of walls and moving it around. Both of these tools are large and can load and smooth large amounts of material with each stroke. For small areas, corners, and returns, use a small pointing trowel or margin trowel to get the plaster in just the right spot.

Start plastering at the top of an inside or outside corner, and use the tape screed line on the ceiling to establish the thickness of the plaster. Starting at the top and working down is crucial to preventing dropped plaster from marring the work you've already done.

Don't worry about getting the surface flat right away; it's more important to get enough material on the wall to be able to move it around. After getting enough plaster on the wall to cover about 10 sq. ft., use large trowels and bodyweight to trowel it to the right thickness. Once that's established, use the edge of that section as a reference to extend the field of plaster across the top half of the wall. Before moving to the bottom of the wall, trowel the plaster flat with a pool trowel. As it hardens, it gets harder to smooth.

The plaster will be leather-hard in about four hours, and takes three to seven days to cure. Because it needs some water to cure, it may be necessary to occasionally spritz the walls with water, but tarping the walls with fabric or plastic isn't necessary for indoor applications. □

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DIGITAL EXTRAS

Go to [FineHomeBuilding.com](https://www.finehomebuilding.com) /magazine for a more in-depth look at hydrated lime, options for coloring and painting lime plaster, a rundown of plaster trowels, additional finish shots of the home, and video of this lime-plaster installation.