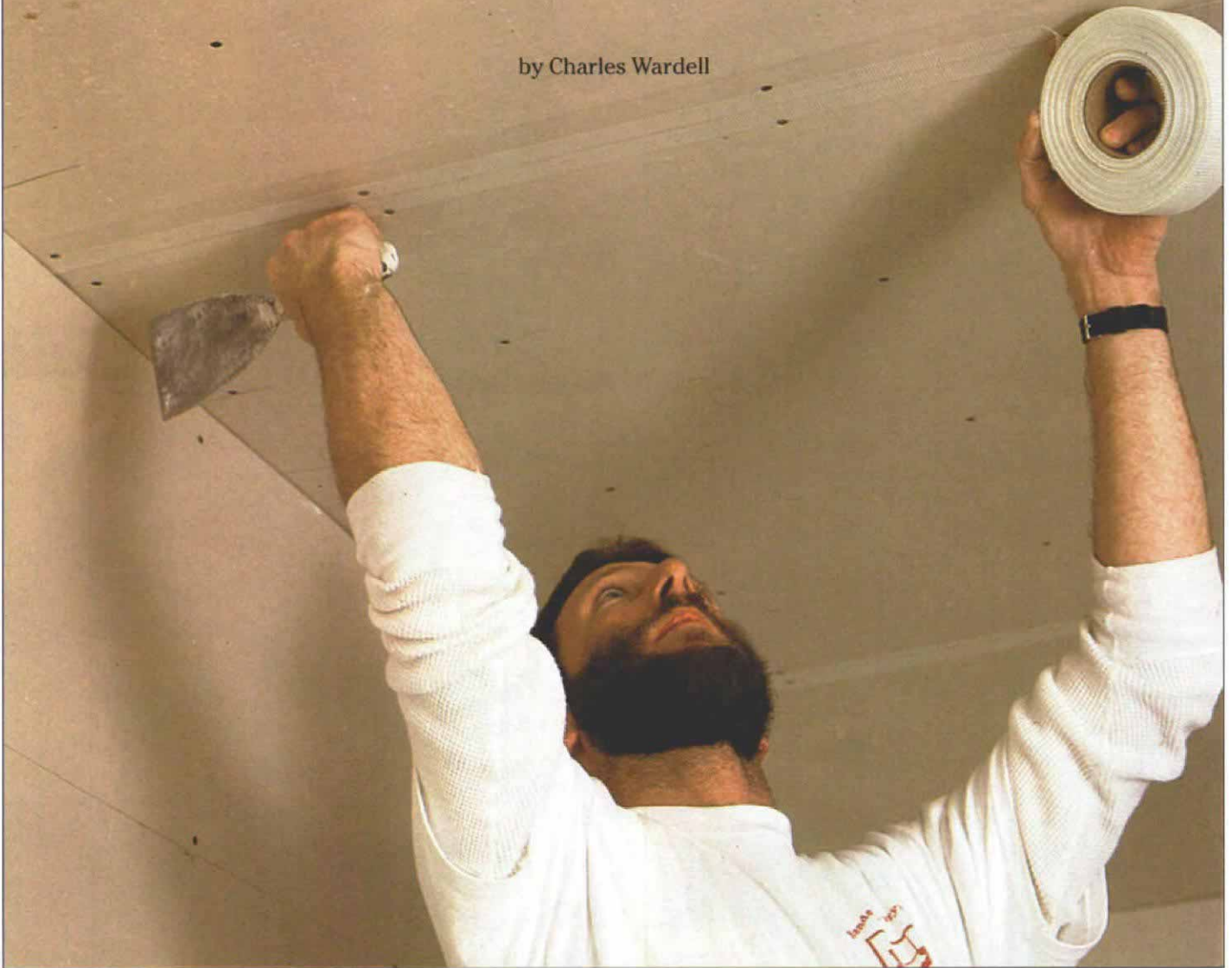


# Taping and Finishing Drywall

How to get smooth walls with minimum sanding

by Charles Wardell



**Fiberglass tape.** Flat seams get taped with self-adhering fiberglass mesh tape. It goes on quicker than paper tape, which must be embedded in a coat of joint compound. When covered with a hard, setting-type joint compound, mesh tape is at least as strong as paper tape.

**T**aping is the art of finishing gypsum drywall. It involves covering each seam with a strip of reinforcing tape and two or three layers of joint compound. Though I'm a builder rather than a drywaller, I've done my share of taping. Especially on small jobs and messy remodels—which describes most of my work—I finish the drywall myself. Sometimes it's impossible to find a good professional who can tape a small job on short notice; other times I just need the work. Fortunately, I find the change of pace refreshing.

Mastering the taping process can take years of practice, but with enough care and patience, I'm convinced that anyone can become an adequate, if slow, taper. I'm a good example. It takes

me twice as long as a professional drywaller to finish a given room, but I've learned how to get professional results.

In this article I describe the tools, the materials and the techniques required to get a smooth drywall finish. The information here is based on my own experience, as well as on countless hours spent watching and talking with pros. If you're a beginner, I suggest that after reading this article you find some experienced tapers to watch. Taping is a kind of dance, and the best way to understand its movements and rhythms is to see it in action. After that you should be ready to venture out with a trowel in your hand—but practice on some closets first.

**Tools of the trade**—One nice thing about taping is that the tools are few and simple (top photo, facing page). Compound is hauled around on an aluminum hawk (a palette for holding joint compound) or in a metal or plastic pan. Some tapers spread joint compound with taping knives; others use trowels. Either way, you'll need four sizes: 6 in., 8 in., 10 in. and 12 in. Use a combination you're comfortable with (for reasons that have nothing to do with logic, I use a 6-in. knife, a 10-in. trowel and a 12-in. knife). If you buy trowels, make sure they're designed for drywall, not for concrete. A drywall trowel has a curved bottom that lies flat when you bear down on it. When properly used, it leaves a smooth fin-



**A tapers' toolbox. Left: a set of drywall trowels. Center: rolls of fiberglass and paper tape. Right a sampling of tapping knives.**



**Mixing mud.** Powdered, setting-type joint compounds are mixed with water. A mixing paddle and a 1/2-in. drill come in handy for stirring up large batches.



**Patching and filling.** Use mesh tape over cavities and gaps that need patching (photo above left). Then fill them with setting compound. You can also use setting compound to fill the gaps between fiberglass shower stalls and the adjacent drywall (photo above right). Once the filler sets up, the seam between it and the surrounding drywall should be taped like a buttjoint.



ish and a nice feathered edge. Concrete trowels, on the other hand, are flat and will eventually bend in the wrong direction.

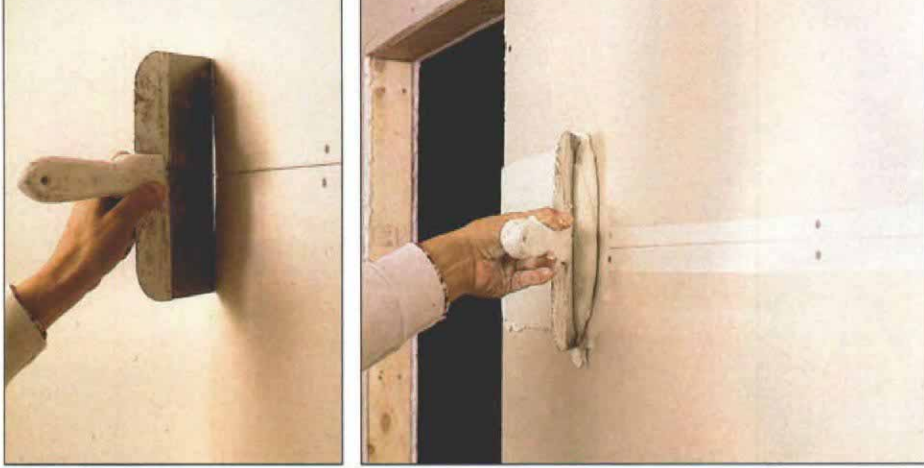
**Tape types**—Not long ago, all seams were created equal. A bed coat of plasterlike joint compound was spread along the length of the seam, and a paper reinforcing tape embedded in it. Then the excess compound was removed, and the surface smoothed with a tapping knife. These days most flat seams get finished with a self-adhering fiberglass mesh (photo facing page). It's easier to apply than paper tape, and there's no bed coat, so it eliminates a step. Mesh tape is also less likely to blister and trap air bubbles than

paper tape is, but it is considerably weaker. Tests conducted by USG Corporation (P. O. Box 806278, Chicago, Ill. 606804124; 312-606-4000) show that joints reinforced with mesh tape will crack when subjected to only half the load and deflection as joints taped with conventional paper tape and joint compounds. You can compensate for the difference in strength by covering mesh tape with high-strength, chemically setting joint compound (more on this later).

Mesh tape is unacceptable for corners, however. You can't fold a neat crease into it, and the edge of the tapping knife can slice right through mesh tape. Corners should always be covered with paper tape (top photo, above). It's smooth,

strong, and it comes precreased down the centerline, making it easy to form crisp corners. Some suppliers sell perforated paper tape that is supposedly less likely to bubble, but none of the professional drywallers I know see any difference between it and the solid paper tape.

**Varieties of joint compound**—Drywall companies market several types of joint compound. For commercial work these include distinct "taping" and "topping" compounds. The former bonds tightly both to tape and drywall; the latter shrinks less and is easy to spread and sand. Both varieties come in ready-mixed and powdered forms. But for most residential work, the impor-



**The knife rides over the recess.** The long edges of drywall panels are recessed to accommodate the tape and the joint compound that covers it. As the joint compound is applied, the wide blade of the tapping knife rides on the flat faces of the gypsum panels.



**Spotting nails.** Nail holes get filled with repetitive coats of ready-mix joint compound.



**Recessing lumps.** Lumps are easily taken care of with a knife handle. But don't use setting-type compound in a nail hole: It dries so hard that it's difficult to sand.



**Taping inside corners.** After knifing a bedding coat onto the wall and ceiling, drywall taper Brian Henderson pushes a folded strip of paper tape into the corner (above). Then he sets the tape into the compound with a tapping knife and at the same time removes the excess joint compound.



**Outside corners.** Straight outside corners get covered with a metal corner bead, a layer of setting compound and two coats of all-purpose compound. The corner bead helps guide the tapping knife.

tant distinction is between all-purpose compounds and powdered, setting-type compounds.

**All-purpose**, or drying-type, joint compound is known in the trades as mud. It's a vinyl-based product that dries as the water in it evaporates. All-purpose joint compound takes at least a day to dry—more if it's damp or cold outside. If the joint compound is spread on too thick, it will shrink, crack and take aeons to dry.

All-purpose joint compound comes ready-mixed in 5-gal. buckets and in powdered forms. For convenience I almost always buy the ready mix. (I hate mixing the powdered stuff, and the buckets come in handy for everything from storing wintersand for the front steps to hauling surf-casting lures to the beach in the summer.) Like most residential builders, I do most of my taping with all-purpose compound.

**Setting-type** compound hardens by chemical reaction rather than drying by evaporation. It's sold as a powder and mixed on the job site (bottom left photo, p. 73) to a consistency like peanut butter (not yogurt). You should mix only what you'll use right away because it can't be retempered once it starts to harden. Most pros use a mixing paddle attached to a 1/2-in. drill. For small amounts, though, a regular potato masher works just as well. The kind with the curved edge makes it easy to scrape excess compound from the inside of the mixing bucket.

Joint compounds with setting times from 20 minutes to five hours are available, and the compound can be recoated as soon as it sets. I use Durabond 90, by USG Corporation, which sets in 90 minutes. If you need to speed up the process, you can add a chemical accelerator (available from suppliers). Or you can use a professional trick: mix the powder with warm water or with water that you've just washed your tools in. The 90-minute powder will dry in half an hour.

When coating fiberglass mesh tape, USG recommends that you use a special high-strength, chemically setting compound called Durabond LC. But none of the pros I know use it. They use standard Durabond, and you can bet if they were getting callbacks they'd switch in a heartbeat.

Setting-type compound dries rock hard and doesn't shrink, even when spread on thick. It is ideal for patching holes and for filling gaps—places where all-purpose compound will shrink and suck in the reinforcing tape. Setting-type compound is also unaffected by humidity. The stuff may take longer to reach full hardness on a damp day, but you still can safely recoat it. The professional tapers I know use setting-type compound for the first coat on everything but nail holes. It creates a strong seam and lets them put a second coat on during the same day.

Setting-type compound probably isn't a good product for beginners to use. The stuff is nearly impossible to sand, so you have to smooth it perfectly. And it's not water-soluble. If you screw up a seam with all-purpose joint compound, you can often loosen it with a second coat. The underlying coat will soak up the moisture from the second coat, softening it enough for you to scrape it off. You can't do that with setting-type compound. If you make a mistake, you almost have to remove the sheet.



**Taping a curve.** The corner is covered with an adhesive-backed mesh, which is cut into segments to lie flat on the ceiling (above). A strip of metal-reinforced corner tape is then sliced in half (below left) and bedded in setting-type compound (below right). The bottom of the tape extends  $\frac{1}{16}$  in. past the corner. This protruding metal edge guides the knife as the space behind it gets filled in with joint compound.



Although I haven't tried it yet, USG now sells a sandable, setting-type joint compound called Easysand. It's available in setting times from 20 minutes to six hours.

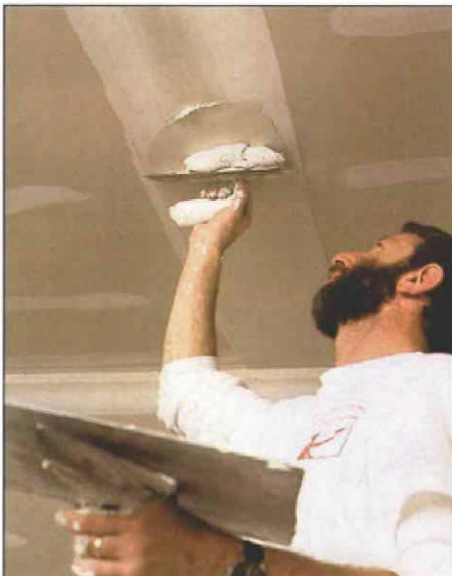
**Storage and handling**—Have you ever spilled a few drops of coffee into a bowl of sugar? If so, you have a rough idea of what you get when you freeze a bucket of joint compound: lots of soft but unwanted lumps (storing a bucket of mud

directly on a cold concrete floor can have a similar effect, even when the air is above freezing). Few things are as frustrating as having lumps in your mud, leaving gouges along the length of your finished seams. Some compound manufacturers suggest that you whip thawed compound back into shape with a mixing paddle, but the advice I get from the field is to dump it. If you *must* use compound with lumps in it, use it for bed coats only, not for finishing.

A potentially worse problem is mud that starts to dry in the bucket. It turns into something that resembles crunchy peanut butter—not a recipe for a smooth finish. To avoid this, keep whatever you're using for a scoop in the bucket, and put the lid on it when you're not actually scooping. At the end of the day, scrape the side of the bucket completely clean with a small tapping knife, smooth the surface of the remaining compound and cover it with a piece of plastic. As further



**One side at a time.** Inside corners are finished by coating one side, then doing the second after the first has dried. Inside corners only need one finish coat instead of two, so the waiting time doesn't slow down the schedule.



**Top coat and feathering.** Finish coats of joint compound are applied with a wide knife or trowel (above left). Then the ridges along the edges are taken out with a taping knife held at a slight angle (above right). In his left hand Henderson holds a metal hawk—a palette for holding joint compound. Its rim makes a handy place for cleaning the edges of drywall knives and trowels.



**Doubling a joint.** Butt seams are high points on the drywall's surface. One way to make them less conspicuous is to spread a band of compound on either side of the seam, then go over the center after the bands have dried. In this photo, Henderson has just gone over the center of the seam with a troweled layer and is now feathering the edges.

insurance against unwanted drying, pour a half-cup of water over the plastic. If the compound does get lumpy, get rid of it.

For similar reasons, joint compound should always be worked and left to dry at room temperature, meaning 60° F or above. The colder it is, the longer the mud takes to dry. If it's allowed to freeze while still wet, it will develop lumps and will have to be removed. Professional drywallers tend to have large portable heaters that they use to warm whatever space they're working in.

If you don't have a good heater, and the air is cold or wet enough to slow down drying but not enough to damage the finish, you'll just have to wait. Although a coat of compound will dry overnight in a warm, dry house, it can take two or three days when the house is cold or damp. But premature recoating can have unpleasant side effects that make it hardly worth the risk. The excess moisture could overwhelm the bond between the paper and the underlying gypsum. In corners, the edge of the knife could dig into the adjoining wall. And semidry mud can flake, which means you'll pick up clumps of hardened compound with your taping knife. Just accept the fact that the mud needs to dry.

**Filling holes**—Once you're ready to begin, first fill all damaged areas and large gaps with setting-type compound (bottom right photos, p. 73). Look for loose, crumbled edges at seams and around electrical boxes and other wall penetrations. Cut away damaged areas, cover them with mesh tape and repair them with setting-type compound. Also look for bubbles in the drywall's facing paper (occasionally you'll get a bad batch of drywall). Cut these out and patch them, too.

When tooling joint compound into deep gaps, you'll notice that pulling the trowel toward you will pull the compound out of the gap. But holding the trowel at a slight angle while pushing away from you will slice off the excess.

**Running tape**—Run the self-adhering mesh tape over all the flat seams, remembering that flat seams come in two varieties: butts and tapers. Butts are where the narrow ends of two sheets of drywall meet; tapers are where the long edges come together. The surface of a butt seam lies in the same plane as the rest of the sheet, while a tapered seam has a recess for the tape that later gets filled with compound (top left photo, p. 74). Start with the butts, beginning and ending the tape at the centerlines of corners or tapered seams. Then do the tapers, making sure to cover the ends of the tape that you used in the butts (later, the ends of the tape in the recesses will be covered by the paper corner tape).

**Slinging mud**—Now you can start filling the recesses with joint compound (top right photo, p. 74). After they've dried, do the butts. And once they've dried, move to the inside corners, the outside corners and the nail holes, in that order.

Spread the compound with one knife and smooth it out with a knife that is 2 in. wider. Try different knife angles until you're able to smooth the wet compound and simultaneously feather its edges. This takes practice, but it beats sanding

down a fat seam. In fact, one of the biggest mistakes I consistently made as a beginner was that I spread my compound on too thick. But after several unhappy bouts with sandpaper, I finally got the message. When in doubt, I now err on the side of too little compound—it's a lot easier to add than to remove—and I spend extra time feathering the edges. Eventually the edges will have to be sanded so that there's no distinct line; the more carefully I spread the mud, the less sanding I have to do later.

Screw holes and nail holes (dimples) get filled with three or more layers of the all-purpose mud. As each coat dries it shrinks and must be recoated (middle left photo, p. 74). Sometimes, though, air trapped behind the mud can push it away from the fastener head, forming a lump. In that case just use the handle of your taping knife to push it back in before recoating (middle right photo, p. 74).

Never use setting-type compound on nail holes. It's much denser than all-purpose mud, making it even more likely to lump. And it's too hard to push back into the hole, or even to sand.

**Inside corners**—To tape an inside corner, begin by prefilling your paper tape. Then spread a 4-in. wide bed coat of Durabond on both sides of the corner. Press the tape into the corner every 5 in. or 6 in., then use a knife to smooth it out, one side at a time (bottom left photos, p. 74).

You can buy right-angle corner trowels, but they cause more problems than they solve. A corner trowel makes you concentrate on the center and both sides at the same time, and the blade's configuration prevents you from using your fingertips to control its pressure. One side might turn out all right, but the other will end up too thick with a ridge that has to be sanded down.

**Outside corners**—Straight outside corners are the easiest part of the job. They get dressed with a metal corner bead, filled with a layer of setting compound (bottom right photo, p. 74), then finished with all-purpose compound. On oblique angles, you'll have to use metal-reinforced corner tape: a paper tape laminated to two strips of thin galvanized steel. It's not as sturdy as rigid bead, but it's better than no reinforcing at all.

Because outside corners get a lot of abuse, it's a good idea to use the setting-type compound on them, even if you don't use it anywhere else. All-purpose joint compound is fairly soft and can chip and crumble when the movers bump it with a credenza or when your client's 5-year-old crashes into it with his bicycle. Setting-type compound takes all this in stride.

Curved outside corners are a special challenge because you can't get straight corner beads around them. Most drywall suppliers have segmented specialty beads that are made just for this purpose, but you can also improvise. One way is to use a combination of adhesive mesh and metal-reinforced corner tape (photos p. 75).



**Labor saver.** A pole sander brings ceilings closer and keeps drywall dust at arm's length.

After covering the corner with adhesive-backed mesh tape, spread a coat of setting-type compound on each surface. Then slice the metal corner tape lengthwise down the crease and lay it along the curved surface, letting the bottom edge extend  $\frac{1}{8}$  in. past the corner. The space behind it gets filled with the second coat.

**Finish coats**—Once all the seams have been taped, the sequence changes a bit. On the next two coats, do the butts, the tapers, the outside corners, the inside corners and the nail holes, in that order. Inside corners need only one finish coat instead of two (they're just not as conspicuous as flat seams), so coat one side of each corner (top photo, facing page) while doing the second coat on the flats, and the rest of the corners while doing the third coat on the flats.

Each coat should fully cover the one beneath it, which is why you need progressively larger trowels or knives. The second coat is a repeat of the first, except that you're using ready-mix compound and the 10-in. trowel (middle left photo, facing page). First go over the joint with a clean knife to scrape down ridges or bumps. Then lay on a coat of mud. Wipe the trowel clean on the edge of your hawk or mud pan and drag the trowel along the full length of the seam, filling in hollows and smoothing the mud. Ridges along the outside edges can be smoothed with a knife (middle right photo, facing page). If you get a nick in the knife's edge, it will make a line in the mud. Sand out the nick with 100-grit sandpaper.

Use the 12-in. knife or trowel for the last coat. If the other two coats have gone well, this should only be a skim coat. Spread a thin layer over the joint, then make long, smooth runs over it with your knife while applying plenty of pressure.

When spreading mud, it's best not to cross wet seams with your knife or trowel. If you have time, let the butts dry before doing the tapers. To be honest, though, I rarely heed this advice. Unless I'm working on another part of the house, I usually can't afford the extra trips to the job. Instead, I'm very careful at intersections, easing up on the knife when it crosses over the butt seams so that the edge just skims the surface.

**Finishing butts**—Butt seams are the hardest part of the job to get right. Rather than lying in a re-

cess, the tape is a high point on the surface of the drywall. One professional taper I know says the best solution is to double the width of the joint. It demands a lot of knife control, but it's the most effective technique that I know. As with the tapered seams, he runs his tape and beds it with a first coat of setting-type compound. But on the second coat, he spreads a band of mud on both sides of the seam, resting one end of the knife on the tape itself while using the other end to feather the outside edge. This creates a wide, flat area that can be skimmed with a third coat (bottom photo, facing page).

**Sanding and sponging**—Sooner or later you'll have to sand. Sanding levels the finished seams, feathers their edges and roughs up their surface so that they don't show through the paint as excessively smooth areas. Professional drywallers usually don't have to sand until after they've completed the final skim coat. Most beginners, on the other hand, sand between every coat because they've spread the compound on too thick (the rest of us fall somewhere in between).

Sand with 150-grit or 220-grit sandpaper, depending on how good a finish you want. (Experiment to see the difference.) You can use folded sandpaper, a sanding block or a pole sander. A pole sander (photo above) can be fitted with a sanding screen especially for drywall. It's great for ceilings and corners, especially between coats where you're not being too fussy. Paper may be a better choice for sanding critical areas at eye level. It gives you more control and lets you check the surface with your fingertips as you go. Sanding blocks are an intermediate choice: They're faster than sandpaper but draw you closer to the work than a pole sander does. Grit-coated, sponge sanding blocks are good for sanding corners, but you need to tear off the diagonal edges to keep them from gouging the wall.

Drywall dust is very fine, so wear a dust mask. Because the dust is so fine, it finds its way into the last places you want it. The only way to keep clients happy is to be obsessive about laying out dropcloths, using tarps to cloak furniture and close off rooms, cleaning up constantly and giving plenty of advance warning.

If dust is absolutely unacceptable, you still have an alternative. Because all-purpose compound is water-soluble, you can feather its edges with a wet sponge (special drywall sponges are available for this purpose). Dip the sponge in water, squeeze out the excess, then use it as you would a sanding block. But don't soak the drywall's facing paper. It rips easily when wet. One disadvantage to sponging is that it will only blend the edges; you can't use it to correct real mistakes. If you sponge you'll have to do a better taping job, which usually means four coats of compound instead of three. □

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