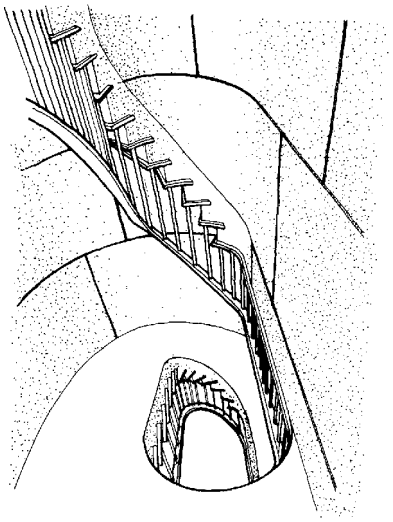


Bending drywall is easy—if you first spray it lightly with water.

Mastering Drywall

It's a first-class wall finish once you know the tricks

by Marylee MacDonald

Many people consider drywall a cheap, less desirable wall or ceiling surface. But a good drywall job ranks right up there with the very best finishes.

This article will discuss some of the special products and systems that have been developed to make drywall perform as a monolithic wall covering, free of nail pops, visible seams, and cracks. With them you can add a bit of refinement to your drywall work.

There are more ways than one to achieve a good drywall job. Changing the type of drywall or fasteners will often make the difference, or a new taping compound may improve the quality of the work. In certain instances, the job may require a different application method than the standard half-inch all around.

Let's look at some products you may not find in your local lumberyard, and installation methods you may have overlooked.

Sheets of Rock

Drywall is made of gypsum—calcium sulfate—a natural rock mined and manufactured into a variety of building products including gypsum plaster and drywall. (Sheetrock is actually the trademark of U.S. Gypsum's drywall product.)

Gypsum combines readily with water, making drywall so vulnerable to moisture damage. It is fire-resistant because of water chemically bound into the gypsum molecule. You can get up to a four-hour fire rating in a gypsum panel—far greater than for most other building materials.

Many contractors are not aware of the variety of drywall products that should become part of standard practice. Some cost more, but they can be worth using.

SW tapered drywall has an edge that is both tapered and rounded. It produces much stronger joints than standard tapered edges, especially when used with setting-type joint compounds. It comes in ⅜-, ½-, and ⅝-inch thicknesses.

Fire-code X is ⅝-inch-thick and provides a one-hour fire rating.

Fire-code C panels are available in ½- and ⅝-inch thicknesses and can be combined with framing materials to provide one- to four-hour resistance ratings.

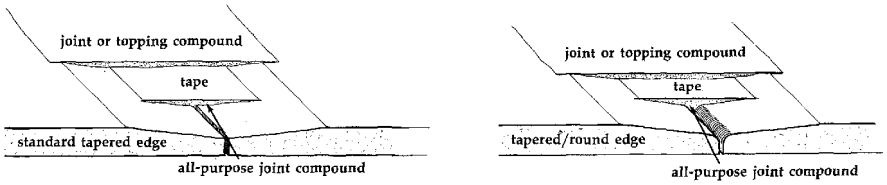
Foil-backed drywall is good if you're tired of wrestling with polyethylene. The foil backing provides a reasonably good vapor retarder (0.06 perm), but its in-place performance as an air barrier depends on the installer. Be conscientious about caulking all joints and making sure panels fit tight. Foil-backed drywall can be combined with the airtight-drywall approach by using gaskets.

If the foil faces a dead-air space at least ¾-inch wide, it will provide some insulating value, especially against the downward flow of heat. The foil has no insulation value, though, if it is tight against batt insulation.

W/R drywall and W/R taping compound are water-resistant, not waterproof. All drywall products should be kept dry, since one good wetting will destroy the boards' structural integrity. Manufacturers list lots of cautions about using W/R board. For example, they recommend not using it over vapor retarders. Don't use it in remodeling unless it's applied directly to the studs. Don't use it on the ceiling or as tile backing.

These cautions are intended to guard against problems that may occur in high-moisture areas, such as around tubs and showers. If water vapor gets into the drywall on a poorly insulated wall, it is likely to condense into water. And, as we all know, gypsum hates water. The asphalt that is used to make it water-resistant won't help much once the board is wetted.

Tape all nail heads, exposed edges, and cut joints of W/R board with W/R taping compound. This will help keep water out of the board. W/R board is useful in bathrooms and kitchens, but not in areas exposed to constant moisture. Use cement boards, such as Durock, for tub and shower surrounds.



On the left is a standard, tapered drywall edge. On the right is SW tapered drywall, which is both tapered and rounded—providing a much stronger joint.

Installation Methods

Drywall can be a truly superior wall finish if the installer goes a step beyond normal practices. Certain techniques will improve the smoothness of the wall surface, reduce sound transmission, or compensate for uneven framing. The sections below discuss improved ways of installing drywall.

All drywall, even the water-resistant type, hates water. The asphalt that is used to make it resist water won't help much once the board is wetted.

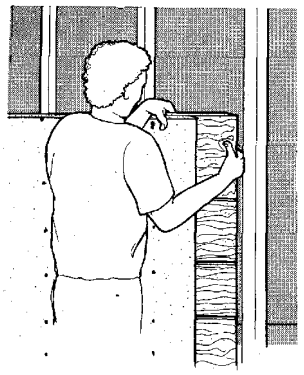
Wood furring. Below-grade masonry and concrete walls often are finished with drywall. A good furring system and moisture barrier are the keys to a long-lasting drywall job here.

Wood furring strips below grade should be at least 2x3s when the drywall is installed vertically. Narrower strips, such as 2x2s, can be used in horizontal applications. These furring strips provide a more stable nail base then the usual 1x3s, plus they allow room for insulation.

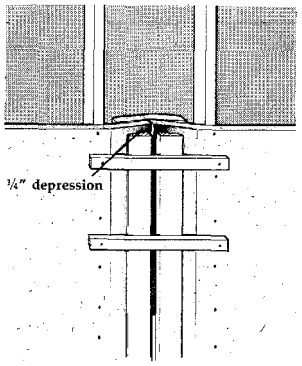
Because water may eventually penetrate masonry or concrete walls, it's a good idea to back up the furring strips with 15# felt. This will divert slight seepage down to the floor, but it won't do much if the wall develops a persistent leak.

Metal furring. Metal resilient channel can be used to improve the sound isolation between apartment units or between rooms requiring privacy (such as the bathroom) and adjacent public spaces. Resilient channel costs a little more, but can be a hidden selling point. (And if you can put the bathroom next to the dining room or living room without sounds being transmitted, you have more floor-plan options.)

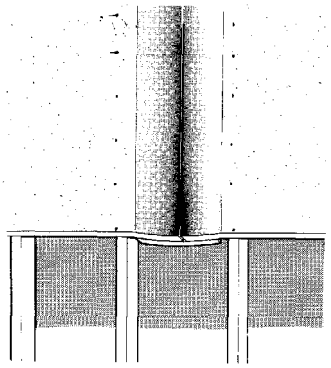
Another system, marketed by U.S. Gypsum, uses metal channels called Z-furring. This system is designed for insulating concrete or masonry walls and is much easier to use than wood furring strips. The galvanized-steel channels are sized to work with thin



Back-blocking allows you to create an attractive, flat joint where unrecessed edges meet. First, join the panel ends at the center of a stud space. Next, wedge scraps of drywall between the studs and cement them to the back of the sheet with joint or setting compound.



After both sheets are installed, nail temporary braces to the studs to force the drywall to bend slightly. Leave the braces until the compound dries (much sooner with setting-type compounds).



After braces are removed, a depression remains to accept tape and joint compound. The joint is then taped and finished like an ordinary drywall seam.

drawings courtesy Small Homes Council-Building Research Council

mineral-wool blankets (1½ to three inches thick by a full 16 inches wide) or polystyrene panels. The system is fire-rated with mineral-wool batts.

Many contractors prefer metal furring for block or concrete walls. But in very cold climates, water may condense on the furring strips on outside walls, leaving a ghost line up each channel. Condensation on the channels should not be a problem in below-grade walls or walls with exterior insulation.

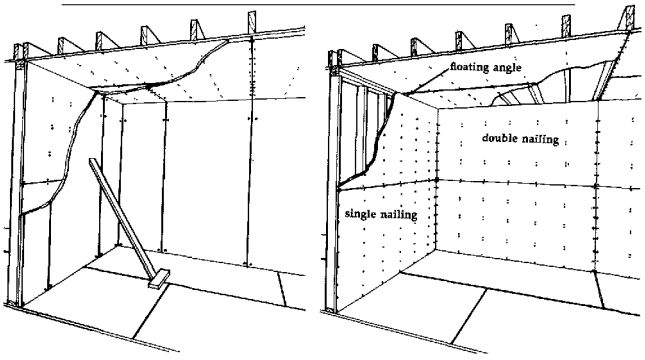
Single-layer installation. In single-layer drywall jobs, install the ceiling first, then the walls. On ceilings, single-layer drywall should be installed perpendicular to the framing for greater strength. Where the drywall runs parallel to the framing, add blocking between the joists at least 24 inches on center.

Ceiling strength is particularly important where insulation sits on the drywall. The weight of the insulation can cause the drywall to sag if it's too thin for the span. To prevent sagging on ceilings, use at least ½-inch drywall for 16-inch-o.c. framing and ⅝-inch for 24 inches on center.

Double layer. Drywall can also be installed in two layers. Two-layer jobs typically are specced for a higher fire rating, better soundproofing, or an extra-smooth job. For some uses, the first layer can be ¼-inch drywall, which doesn't have tapered edges. The finish layer helps to conceal any unevenness in the wall framing, and has few nail holes to spackle. Fewer nails also means less chance of nails popping.

In double-layer applications, nail or screw the first layer to the wall with the normal nail spacing. The second layer is then glued to the first using drywall adhesive, all-purpose joint compound, or a setting-type joint compound. A spreader or notched trowel is used to apply the adhesive to the back of the second layer. Apply the adhesive evenly to avoid bulges in the wall.

A few nails can be placed at the top and bottom to hold the sheet in place with a brace to hold the middle tight. The second layer can be applied either in the same direction as the first layer, with the joints offset by at least 10 inches, or turned perpendicular to the first layer.



With a single-layer system (left), the ceiling drywall is installed first, perpendicular to the joists. A floating angle is shown at the intersection of ceilings and walls. The side wall is single-nailed; the back wall is double-nailed. A double-layer installation (right) can be braced while the adhesive sets. The second layer should be applied perpendicular to the first. Joints should be staggered.

Over insulation. Where drywall is installed over rigid insulation, the double-layer technique gives a better-looking job. With fiberglass insulation, don't let the flanges mess up your drywall finish. If you use faced batts, don't staple the flanges across the studs.

Don't put up the vapor barrier and drywall on ceilings, then wait two or three weeks to insulate. Moisture from drying building materials will be trapped on the room side of the insulation and cause the ceiling to sag. With batts, the proper sequence is to insulate first, install the vapor barrier second, then drywall. In mild climates, you can leave out ceiling vapor barriers altogether.

Nails and Screws

Bugle-headed drywall screws eliminate the problem of paper tearing or extra dimples that look bad and weaken the holding power of the fasteners. They work by spinning the face paper into the cavity under the screw head. Because the facing paper is what gives drywall its strength, the bugle-headed screws yield a stronger job.

When screwing into wood, use USG Type W screws. These eliminate nail pops and are far better than ring-shank nails, especially in new construction where the drying of lumber can be expected to pop nails. Use 1¼-inch screws for single-layer drywall applications, and 1½-inch screws for two-layer drywall jobs (except two ⅜-inch layers). USG also makes a bit (No. 2) to go with its screws.

If you use nails rather than screws, ring-shank drywall nails are best. Though shorter than the galvanized drywall nails you might find in the local hardware store, a good ring-shank nail has much better holding power.

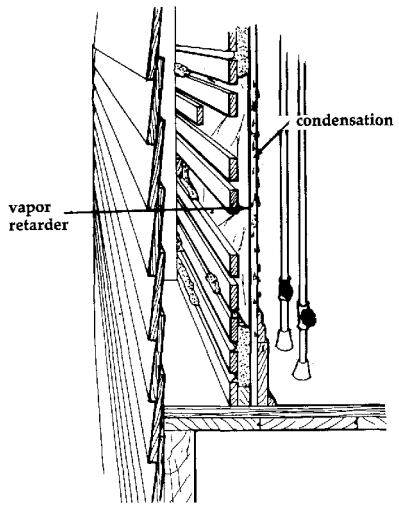
Use a nail that will give you about ¾-inch penetration into the stud. For example, use a 1¼-inch nail with half-inch drywall. Using a longer nail than needed will increase the chance of nail popping, since it will expose more of the nail shaft as the stud shrinks.

In single-layer applications, panels can be single- or double-nailed. With single nailing, the nails are spaced evenly around the edges (never closer than 3/8 inch to the edge) and in the field. The nail spacing always is specified by the manufacturer.

With double nailing, two nails are placed (about one inch apart) along the edges and in the field. Because a double-nailed system is stronger, nails can be spaced farther apart. Double nailing also reduces nail popping.

Another way to strengthen a drywall application is to bond the drywall with adhesive. Adhesive is applied to the joists, furring, or studs with a caulking gun. With adhesive, the number of nails can be cut in half.

Some installers prefer to leave the ceiling and wall corners partially unnailed, or *floating,* in order to reduce cracking there. With the floating-angle system, hold back the ceiling nails from the corner by seven inches (12 inches for screws or double nails) on joists that



If a vapor retarder and drywall are installed over damaged plaster without insulating the wall cavity, the vapor retarder can cause condensation problems in the drywall. Do not use a vapor retarder if the wall cavity behind it is to remain uninsulated.

Minimum Bending Radii for Dry Gypsum Board

Thickness	Bending Lengthwise	Bending Widthwise
¼-inch	5 feet	15 feet
⅜-inch	7 feet-6 inches	25 feet
½-inch	10 feet	

*Use double layer of ¼-inch drywall for 5-foot radius

source: U.S. Gypsum

run perpendicular to the partition. The ceiling is installed first, then the wall panels are pushed up tight against it. With the floating-angle installation, you don't have to use any blocking in these corners—a real relief.

For floating corners where two walls meet, the first drywall panel is left unnailed and the second, overlapping panel is pushed tight against it and nailed normally.

Taping Options

A typical taping job uses one coat of joint compound to embed the tape and one or two coats of *topping* compound—an easy-to-sand joint compound used for finish coats.

You can speed things up and get a stronger joint by using a *setting-type* compound for the base coat (stronger still when used in conjunction with an SW-type panel). Unlike regular joint compounds that dry as water evaporates, setting-type compounds dry as chemicals in them induce hardening. The shorter working time means that these products shrink less than regular joint compounds.

With setting compounds, pre-fill the groove between panels, embed the tape (if you are using paper tape), and strike off the excess. Don't go over the tape again with the setting compound. You don't want to build it up too high because it's awful to sand.

After the pre-filled joint has hardened (about one-half to two hours), apply a second coat of fill. After this coat has hardened completely, the normal third coat of topping compound can be applied.

This taping system can be completed in one day. It eliminates shrinkage and nondrying of large joints or cracks, and provides the strongest joint possible between panels. Working times for setting-type joint compounds are from one-half to six hours. The approximate setting time is indicated in the product's name. For example, U.S. Gypsum's Durabond 45 has a 30- to 60-minute setting time. Durabond 90 is the most common all-purpose choice and sets up in about 1½ hours.

Bending Drywall

Curved stairways or walls may require the drywall to be bent. The thinner the drywall (¼-inch is best) the easier to bend. The bending radii for sheets of varying thicknesses are shown on the chart. Moistened drywall, however, can be bent even farther than indicated.

To bend drywall, moisten the backing paper and the face paper. Use a spray bottle set at a fine mist. After spraying, re-stack the drywall so the moisture does not evaporate. The gypsum core will soften slightly, allowing the drywall to bend. After the panel is nailed to the wall, the core will harden again.

Back-Blocking

Back-blocking is a technique for improving the look of untapered butt joints. It takes time, but it's worthwhile for the occasional job where perfection is desired. Back-blocking creates a tapered well to accommodate the tape and compound without making a bulge.

First install the sheet of drywall so the end floats halfway into the stud or joist space. Then butter drywall scraps (at least eight inches high and the width of a stud space) with joint compound. Wedge the scraps into place behind the overhanging joint.

As each drywall piece is installed, a temporary brace is nailed in place to bow the ends inward (see illustration). The next day, when the brace is removed, the tapered formation remains. The slight depression provides a bedding for tape and joint compound or setting compound. ■

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For information on specific gypsum products, see the technical notes produced by the manufacturers. One of the largest is U.S. Gypsum, 101 S. Wacker Dr., Chicago, IL 60606, (312) 321-4000.