WORKING WITH
Thin Solid Surfacing

New, thinner versions of solid-surface materials fabricate much like plastic laminate

I've fabricated kitchen and bathroom countertops from plastic laminates and most of the solid-surface materials on the market. In the past few

by Bob Cremone

years, though, I've been making most of my tops from one material — Swanstone's 1/4-inch sheet material (Swan Corp., One City Centre, St. Louis, MO 63101; 314/231-8148). Swanstone, which is also available in 1/2-inch thickness, is a solid-surface material made from modified acrylic resins reinforced with fiberglass. Although the material's hardness makes it more difficult to work with than some softer solid-surface materials, it's this very quality that I like: I've hammered on it without so much as leaving a mark and have put a propane torch to it without doing more harm than warming the surface. With the ability to withstand this kind of abuse, it makes a great kitchen countertop material.

Swanstone's durability is also helpful during fabrication and installation, because it's forgiving of the occasional bumps against other surfaces and the inevitable scratches that seem to plague plastic laminate fabrication.

But while the material is virtually shatterproof, it can't be thermoformed, which means I can't use radius corners like you commonly see on island and peninsula tops. Instead, I use either 90-

Figure 1. Working to layout lines, the fabricator glues and staples edge buildup strips in place (above). The top is then flipped over and routed flush to the buildup strips. The final step in preparing the substrate is to cut an expansion kerf 3/4 inch in from the edges, per the manufacturer's instructions (right).

degree or clipped corners.

Easy Fabrication

The 1/4-inch-thick sheets are easy to handle, and the countertops are fabricated much like a plastic laminate top. Depending on your choice of color and pattern, the seams are inconspicuous if not practically invisible.

Regardless of whether the countertop is to be installed in a new or existing kitchen or bath, I first rough-cut the 3/4-inch high-density particleboard substrate in my shop, take it to the job site, and lay it on top of the base cabinets. I scribe the edge against the rear and side walls and trim or shape the particleboard as needed with a jigsaw and belt sander.

Once I have a tight fit to the walls, I mark the outside edges of the cabinets. On the substrate top, I make notes, such as where a stove abuts the countertop, as well as hatch marks across butt joints to help me align the pieces during assembly. I also mark the inside of the sink base cabinet so I can center the sink during fabrication. I make sure to locate any nearby substrate seams at least 12 inches away from the sink.

Fitting the particleboard substrate at the site allows me to follow the contour of the cabinet layout; if the cabinets are out of alignment, the top will follow them. This makes final installation much easier than if I had to scribe the finished top.

Preparing the Substrate

Back in the shop, I flip the substrate upside down and, working with the scribed pencil lines, I subtract 1/4 inch

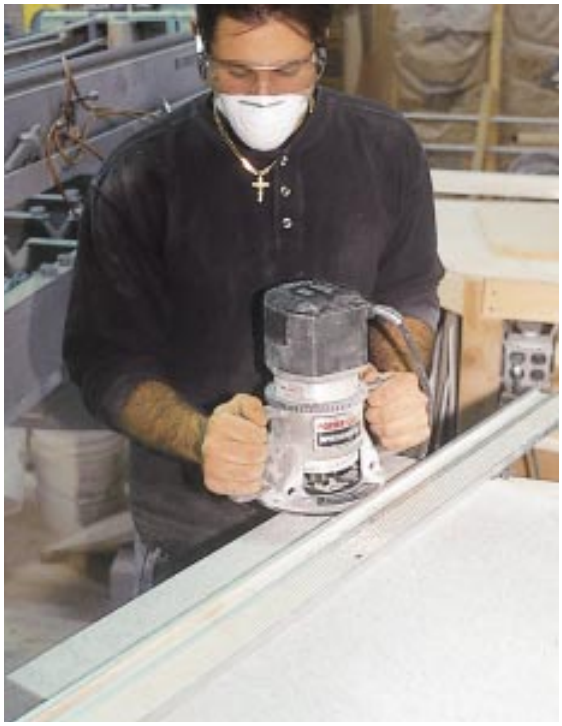

Figure 2. At seams, the author insets a 1 1/2-inch-wide Swanstone strip into a dado in the substrate (left). This provides reinforcement to the butt joint. To ensure tight seams, butting edges are routed with a straight-edge (right).

from any edges that butt against appliances or cabinets (a refrigerator end panel, for instance) and draw a parallel line. This marks where the inside face of the 1/4-inch-thick Swanstone edge will go.

Since I typically project the countertop front edge 2 inches beyond the cabinet face to cover drawer fronts and hardware, I draw another parallel line 1 3/4 inches in front of the cabinets (again subtracting for the thickness of the Swanstone). End overhangs are 1 inch.

Using these lines as references, I glue (carpenter's glue works best) and staple 2 1/2-inch-wide buildup strips ripped from the substrate material along the front and sides (see Figure 1).

Substrate expansion joints. I make sure to place some of the staples within 3/4 inch of the edge. This is because later, I'll have to flip the top and saw a 3/4-inch-deep expansion kerf 3/4 inch in from the outside edge of the top. According to the manufacturer, this kerf allows the substrate to expand slightly if it takes on moisture without breaking the bond with the Swanstone surface material. (I've never had a problem with moisture expansion, but I follow the manufacturer's recommendations for warranty reasons.) The glue and staples keep the 3/4x3/4-inch strip attached to the buildup.

I also leave a 1/8-inch gap between abutting pieces of buildup — again, because the manufacturer recommends it, but also because this gives me a good place to attach the spring clamps that I use to hold the edging in place during glue-up.

I use 1 1/2-inch-wide buildup strips

Figure 3. Gluing up Swanstone is much like gluing up laminate: Contact cement is spread on mating surfaces, and dowels are used as spacers while the solid surfacing is positioned (far left). At seams, acrylic adhesive is applied to mating edges and the Swanstone insert (middle). The author uses pipe clamps to secure the joint while the adhesive sets (left).

Figure 4. With the top flipped upside down, the edge banding is attached with acrylic adhesive and spring clamps (above). The edging fits tight against the bottom of the overhanging top surface. After the glue sets, the counter is flipped over and the top is routed flush with the edging.

along the back, setting them about 3/4 inch in from the edge. Where sections of the substrate butt, I stitch the pieces together with pneumatic corrugated fasteners, then glue and staple a 10- to 12-inch-wide piece of particleboard reinforcement over the joint.

Finally, to finish the substrate blank, I flip the top over and using a bit with a bottom-mounted bearing guide, I rout the sides and ends of the top flush with the 2 1/2-inch buildup strips. I touch up any ripples in the cuts with a belt sander, and square up inside corners with a chisel.

Sink cutouts. For sinks and drop-in cooktops, I lay a template on top of the substrate, holding back the appropriate distance from the front edge, and mark the outline. I drill a pilot hole, and carefully make the cutout with a saber saw.

At this point, the top is almost ready for the solid-surface material. If at all possible, however, I first take the top to the site for a dry fit. I bring along a belt sander, hand plane, and jigsaw to make any adjustments. This may seem like a waste of time, but I learned the hard way that a simple layout error can eat up valuable time correcting the mistake, to say nothing of the extra material I'm forced to buy.

Rough-Cutting the Swanstone

The first step in laying up Swanstone is much like scribing the substrate to the cabinets. I place the 1/4-inch material on top of the fitted substrate and mark its perimeter. I make certain that any Swanstone seams are offset at least 12 inches from any seams in the substrate. I flip the material and with a straightedge, draw new lines parallel with and 3/4 inch outside of the scribed marks. This gives me a rough-cut pattern.

Figure 6. All Swanstone seams and edges are sanded with an orbital sander. Finally, the surface is polished with a rubbing compound.

Using a sharp circular carbide blade, I make my cut. From leftover Swanstone material, I rip 1 3/4-inch edge banding strips on the table saw.

At joints, I always trim the factory edge on both pieces with a straight-cut carbide router bit run along a straightedge. Next I rout a 1/4-inch-deep by 1 1/2-inch-wide dado in the substrate (Figure 2), centered under the joint line. I inset a flush-fitting Swanstone spline, fastened with countersunk screws. This spline reinforces the adhesion of the Swanstone at the joint, ensuring an inconspicuous joint line.

Glue-Up

The Swanstone goes on the top first, then the edges — just the reverse of plastic laminate tops. To prepare for glue-up, I blow off the substrate and Swanstone surfaces to remove debris, then wipe everything down with a rag dampened with denatured alcohol to remove final traces of dirt.

Two types of adhesive. Assembly requires two different types of adhesive — contact cement to bond the substrate to the solid surfacing and a gun-applied two-part acrylic adhesive to adhere the Swanstone to itself.

Figure 5. Deep-throat vise-grip clamps hold the undermount sink in place while the adhesive sets (far left). After the top is routed flush with the sink edge (middle), the author bores holes for the faucet with a carbide-tipped hole-cutter (left).

I use Lokweld waterbase non-flammable contact cement, applying it with a roller — one coat to the substrate and one coat to the solid surfacing. It's critical not to contaminate surfaces with incompatible adhesive. I use masking tape at edges and joints — places where the solid surfacing has to bond to solid surfacing — to keep it clean of contact cement (Figure 3).

Depending on humidity and temperature, the contact cement sets up within 15 minutes. I then lay 1/2-inch dowels across the top about 24 inches apart. I lower the Swanstone onto the dowels, check alignment with the substrate, then pull out the dowels. Instead of using a J-roller to apply pressure, I hit the Swanstone with a rubber-faced mallet to secure adhesion.

Joints. At joints, I apply acrylic adhesive to the spline and the butting Swanstone edges. Some fabricators use suction cup clamps to hold the joined panels snug while the glue dries, but I prefer to use long pipe clamps. I also use swivel-nose Vise-Grip clamps along both sides of the seam.

It takes about 30 minutes for the acrylic adhesive to set up. Before removing the clamps, I check to see if the oozed-out adhesive is dry and brittle. If it is, it's safe to remove the clamps.

Edges. At this point, I flip the top over on its back to glue on the edges. I squeeze a 1/4-inch zigzag bead of acrylic adhesive along the built-up edge of the substrate and another bead on the back of the Swanstone edge strips. I use lots of spring clamps to hold the edging while the adhesive sets up (Figure 4).

Once I'm confident the adhesive has set up, I trim the edges with a flush-cut router bit. I finish the edges off with an orbital sander and run a belt sander along the underside of the countertop to flush up the edge with the bottom of the substrate buildup.

Mounting the Sink

It's relatively easy to install a Swanstone undermount sink. With the countertop upside down, I center the sink in the cutout in the substrate, and mark its final placement. Then I pull the

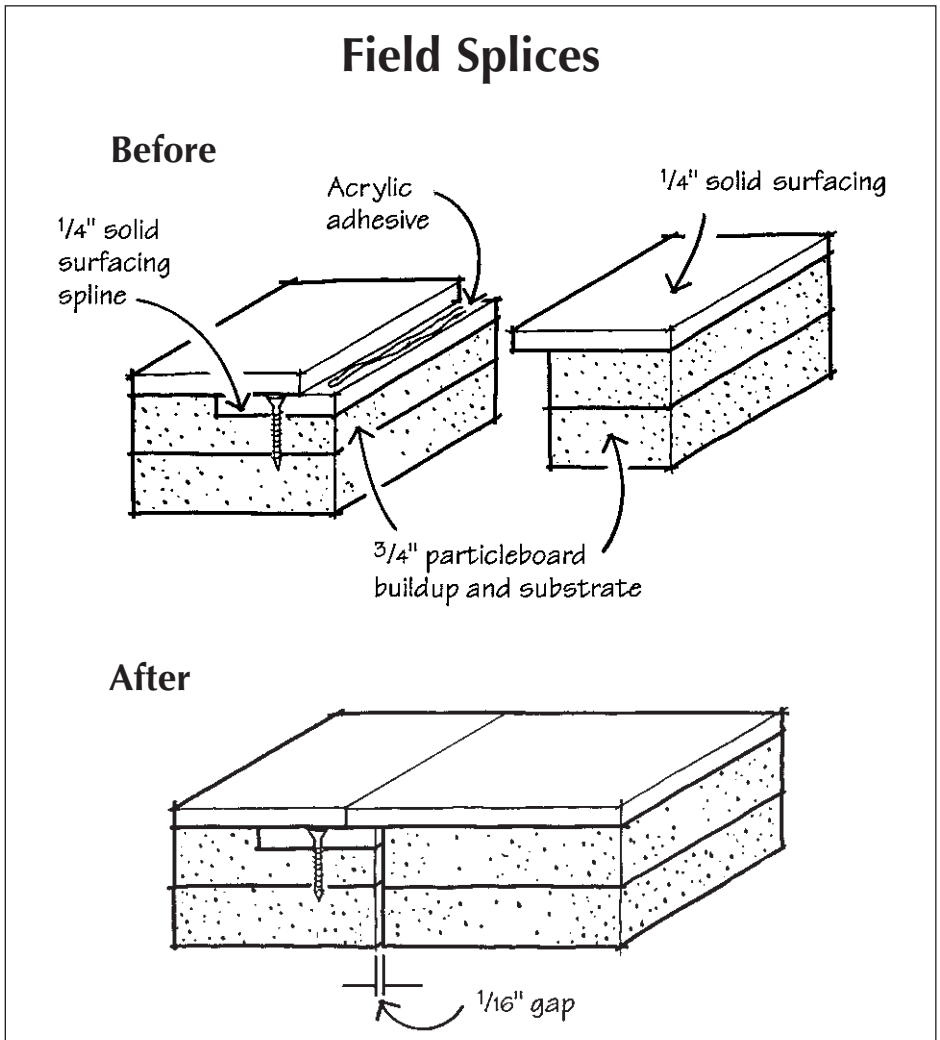

Figure 7. Field splices are necessary for large counters that can't be moved to the site in one piece. The substrate is cut 1/16 inch short to ensure a tight joint in the solid surfacing.

Figure 8. Backsplash material comes with a recess for 3/8-inch plywood. The splash can also be cut in half for a shorter profile.

sink out and rough up the lip with 80-grit sandpaper. I apply a bead of acrylic adhesive to the top edge of the sink, set the sink back in place, and clamp it with Vise-Grip clamps (Figure 5).

After the adhesive has set up (I usually give it an extra 30 minutes), I remove the clamps and install retaining clips, which provide additional support to the sink. Then I drill a pilot hole through the drain opening into the Swanstone, flip the top over, and rout around the sink edge with a bottom-mount bearing round-over bit.

Finishing

I finish up all the joints, corners, and edges with an orbital sander, then apply rubbing compound to all surfaces and polish by hand or with an electric buffer (Figure 6, previous page). The rubbing compound removes surface grit and little nicks that may have happened during fabrication.

Installation on the job site is easy. Before setting the top on the base cabinets, I apply a bead of clear silicone caulk to carcase edges, then set the top.

Some countertops are too big for me to fabricate in a single piece. For those installations, I'll fabricate separate pieces, creating a lap seam where the two pieces butt together (Figure 7). To ensure a tight fit, I cut the Swanstone for the upper lap about 1/16 inch long.

Backsplashes are a snap. Swanstone makes a 3 3/4-inch-wide U-shaped backsplash profile to which I adhere a 3/8-inch plywood filler piece (Figure 8). I then cut and fit the splashes, and glue them to the wall with panel adhesive. A color-matched caulking finishes the seam between the top and backsplash.

Cost

Though Swanstone doesn't have the name recognition of the full-thickness solid-surfacing materials like Corian, it also doesn't cost as much. The price of Swanstone falls somewhere in between the price of laminate and full-thickness solid-surface materials. For example, I sell a 13-foot countertop with integral sink for $1,400, installed, or a little over $100 per linear foot.

Working with Swanstone enables me to offer a solid-surface material that is heat-resistant and difficult to chip at an affordable price. I can close sales that would have been lost to the higher-priced solid-surface products.

Swanstone will soon introduce a factory prefabricated countertop with built-in front edge that will retail for $49 per linear foot, suitable for straight runs and L-shaped or U-shaped installations. The installer mounts a separate backsplash to the wall and glues on end caps. With this product, customers will be able to have a solid-surface countertop for little more than the price of a custom laminate top.

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