Custom Work With

PLASTIC LAMINATES

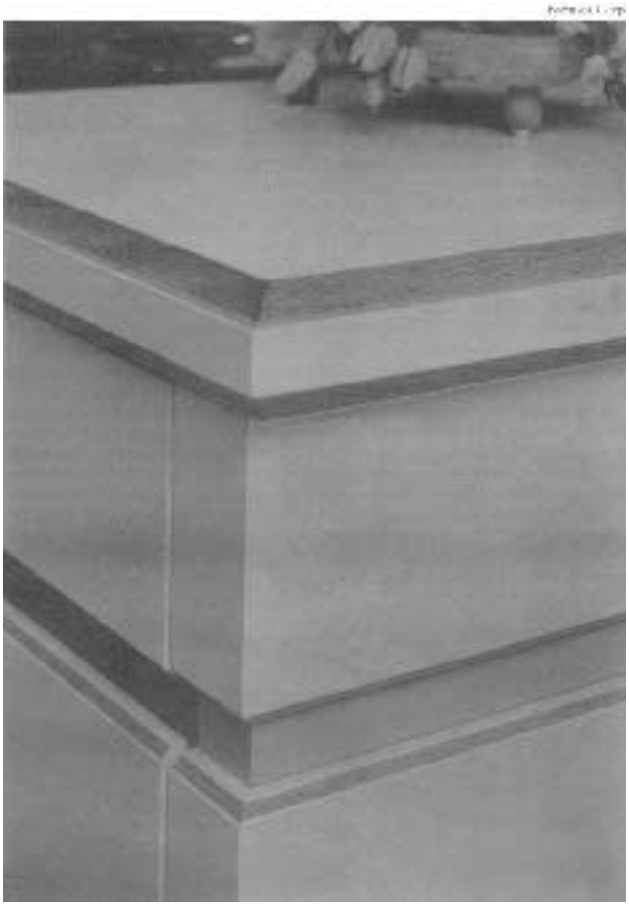
This practical product is most attractive when not trying to imitate other materials.

by Joshua Markel

When I first became a cabinetmaker 11 years ago, I would become queasy when someone asked for wood-grain plastic laminate. At that time, "plastics" symbolized the phoniness of an era that many of us were trying to get away from.

In time, however, I came to realize that plastic laminate, when it wasn't trying to imitate something else, could be a valid and useful material for certain applications. In kitchens, its water resistance and durability made it a logical choice. And it even began to dawn on me that the dense and uniform colors of its surface presented some definite design advantages for a room like a kitchen, which could profit from animation.

Around the same time, I also began to realize that it was senseless for me to try to compete with the many mass-produced plastic-laminate cabinets and tables already on the market. I needed to use plastic laminates in ways that were not generally available. Any custom builder who works with plastic laminates should have unique design ideas to offer to clients.



Wood and plastic laminate combine here for an interesting edge treatment. Because the laminate is Colorcore, no dark edges show.

What are Laminates?

Plastic laminate is really a thin layer of melamine, bonded under high pressure to layers of a paper-like substance which is saturated with a bonding agent. It is available in two thicknesses. Horizontal grade is 0.050 inches thick, and generally used for countertops and heavy duty cabinetry (as in commercial installations or medical examining rooms). Vertical grade, 0.035 inches thick, is used for surfaces sustaining less wear.

Another material, first marketed under the name Colorcore by the Formica Corporation, is now available from all major manufacturers under their own brand names. Unlike normal plastic laminates, it is uniform in texture and color throughout its thickness. Therefore, there are no dark lines at the seams, and deep scratches don't show as much because the color remains uniform.

In exchange for these benefits, you must pay at least twice the material cost. Also, Colorcore-type laminates are brittle. They should not be used if a tight bend is necessary, and large sheets must be handled very carefully to prevent shattering. They should never be rolled up for shipment.

Substrates

Plastic laminates must be adhered to more substantial material, called the substrate, in order to gain structural integrity. Flakeboard is useful as a substrate because it is both inexpensive and dimensionally stable. If you used solid wood, it would change in size with the seasons, causing delamination. If you used one of the lower grades of plywood, the surface would not be smooth enough to provide good adhesion when coated with contact cement.

Some applications may call for different substrates, however. If you were combining tile and laminate on a countertop, for example, you might want to use a plywood made with waterproof glue. In cabinet applications, laminate is sometimes used in conjunction with melamine-coated particleboard (MCP). This is simply flakeboard with a surface coating of melamine on one or both of its faces. MCP can form the inner surfaces of the cabinets, with plastic laminate used to cover the doors, edges, and exposed exterior surfaces.

What MCP lacks is resistance to gouges and deep scratches. Also, when you cut it, the surface coating will chip at the edge if it's not handled properly. It's usually best to cut it with the coating up and the table-saw blade raised all the way; if that doesn't work, cut it coated-side-down with a sharp blade and score-cut it first to no more than 1/16 inch before final cutting.

If the MCP coating is on both sides, the surface should be scuffed up before applying plastic laminate.

Contact Cement

Plastic laminate is adhered to the substrate using contact cement. The contact cement may be sprayed, brushed, or rolled on. For most fabricators who aren't making a specialty of laminate work, short nap rollers are the best choice. The cement itself comes in three forms: neoprene base with either flammable or non-flammable solvent, and water-soluble latex base.

Like so many other choices in life, the option which is the easiest initially may be the most dangerous in the long term. The flammable material is the cheapest and fastest to use and provides a good strong bond. The non-flammable neoprene-based material has similar characteristics, and both should only be used with proper ventilation and an organic vapor mask. A dust mask is useless here, and the fumes are quite toxic.

I tried the latex material a few years ago, and it had a long drying time and unreliable bond. It's possible that the material has been improved since then or that my technique was wanting, so you may want to test it. Latex is non-toxic and non-flammable, so a less controlled working environment is possible (as in your client's home if you are remodelling).

Pre-cut the laminate slightly oversized, both for the edges and the faces of the panel to which it is to be adhered. Once the contact cement is no longer tacky on both the laminate and the face of the panel, lay down the laminate piece, with dowels or kraft paper to separate it from the surface of the panel. Make sure the laminate overlaps the substrate around the entire perimeter. Then remove the intervening medium and press the laminate onto the substrate. Take a hard rubber J-roller or the edge of a piece of wood and slide it over the entire surface while bearing down.

Panels are generally laminated on the edges first and then trimmed flush. Trimming is done either with a router with flush trimming bit, or with a specialized router called a laminate trimmer. The latter has an adjustable bearing attachment on the bottom and a one- or two-flute cutter.

The face of the panel is then laminated, and flush-trimmed to cover the edges. This makes the edges less vulnerable to being chipped or sheared off.

If a mistake is made in laminating it is not the end of the world. Slip a sharp knife under an edge at a corner and slowly begin to work lacquer thinner (in the case of non-latex contact cement) under the laminate while prying it up. Once the piece is removed, make sure the surface of the substrate is smooth before attempting to laminate a new piece; scrape if necessary.

Wood Edging

If you want to offer something more interesting to a client who has more than a bare-bones budget, consider using solid wood edging along with conventional plastic laminate

construction.

The simplest form this technique can take is in open shelving, with a piece of wood glued to the edge of the substrate and laminate on the top and bottom. (See Figure 1.)

Cut flakeboard pieces 5/16 inch narrower than the final necessary dimension for the sides and shelves. Then glue a wood strip, 5/16 inch thick, to the front edges. Select wood that will contrast nicely in color with the plastic laminate. Machine the wood edging 1/16 inch wider than the flakeboard. Make sure that the edging overlaps the flakeboard on both sides for its entire length.

At this point most people would jig up a router with a partial sub-base and flush off the edging to the flakeboard. I personally prefer to do it with a hand plane and scraper. This is not simply for reasons of nostalgia. In my experience, a router, besides being noisy, increases the chances for error. If the work surface is not flat, the router will not cut flush down the full length of the board. Neither will the plane, but you will be better able to know what's going on before it's too late. The router is also more likely to chip the wood. If you've taken care and truly left only a 1/32- inch overlap, you can do the job quite quickly with a well-tuned plane and scraper.

Forming the Edges

Next, laminate the faces of the board, and use a router to flush off all of the edges. For the front, choose an edge-forming bit that will give the solid wood strip an attractive appearance, such as the cove cut shown in Figure 2. You must not choose a bit that cuts deeper than the thickness of solid wood that you applied. Since there are many sits that remove 1/4 inch, I specified 5/16-inch wood above. But that number could be modified to suit the application.

Molding bits that cut the laminate at a slant should be avoided. These forms (such as a round-over) would reveal a very wide area of the paper-like material that underlies the coating of the laminate.

If you wish to use a round-over, you could laminate the faces of the boards first, and then add the wood edging. (See Figure 3.) This requires that you flush the wood strip to the surface of the laminate. Otherwise the router will not have a flat surface to ride on. With this procedure, the consequences of a mistake are much higher, as the ruined surface will be the final laminate rather than the substrate. Once the wooden edging is applied, round over very carefully so as to avoid damaging the surface of the plastic laminate.

Counter Tops

In making counter tops with wooden edging, there is the same choice to be made concerning the order of operations. If you laminate the surface first and then apply the wood edge, you face the same risk of ruining the counter surface when flushing off the wood. Perhaps you have a method of gluing the edge dead-on without having to flush it off. If so, please let me know. People have a habit of running their hands over counter tops, and even the most oblivious consumers are unfortunately blessed with the ability to feel a discrepancy of a few thousandths of an inch on a surface.

As previously mentioned, the downside of sandwiching the edging is that the edge profile must cut through the laminate at nearly 90 degrees or too much of the backer will be revealed. It is also good practice to see to it that whatever finish is applied to the wood is well absorbed by the exposed edge of the laminate as well. Counters get a lot of moisture on and over them; if any of this moisture is absorbed by the edges of the laminate, it could cause swelling.

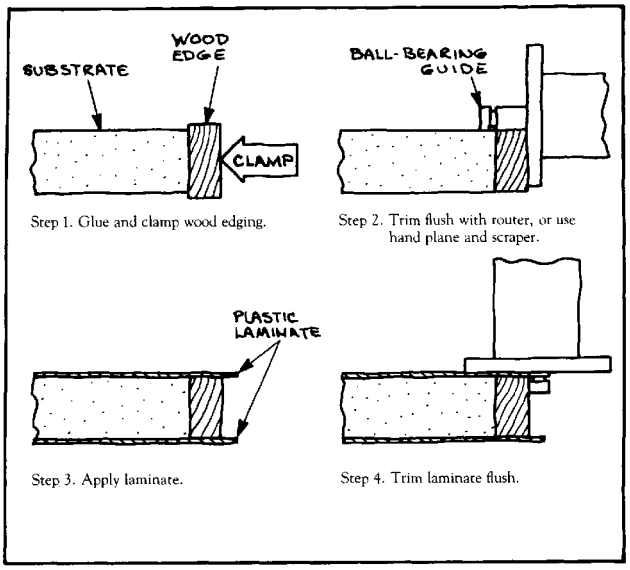


Figure 1. *The easiest way to add wood edging is to sandwich it between two pieces of laminate. The above sequence works well with open shelving.*

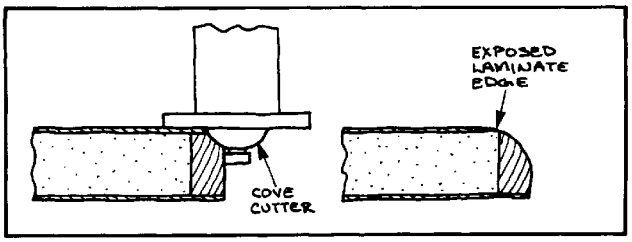


Figure 2. *A decorative bead can be routed into the edge of the routed and laminated (left), but don't use a profile that exposes too much of the laminate edge (right).*

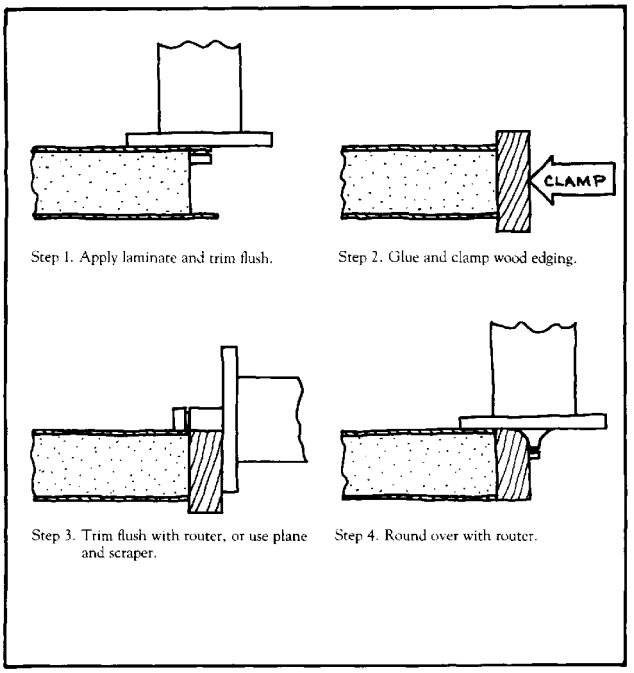


Figure 3. *Applying the edging after the surfaces are laminated can be risky, because a mistake could damage the laminate. The advantage is that the wood edging can be rounded without cutting the laminate at a slant.*

Cabinets

The technique described above for shelving can also be used quite handsomely on cabinet doors and drawer fronts. When applying wood on all four edges, you have to keep in mind what the panel will look like after you machine the edge profile. It will look best and chances of splitting will be diminished, if you miter the wood edging strips at all four corners.

If you must cheat, think about the location of the edge in relation to the viewer's eye. For instance, on a base cabinet door, you might miter the top two corners and butt the bottom two, which are below the viewer's line of sight. Just remember to clamp a block of wood to the bottom edge of the panel at the corner when routing through the butt joint and across the grain of the bottom strip. Otherwise there will be chip-out problems.

If you are making a cabinet with face-frame construction, a nice touch is to make the frame of substrate pieces with a thin wood strip glued to the inside edge. (See Figure 4.) Flush off the wood strips as described above. Make the face frame about 1/16 inch oversize and attach it to the cabinet carcase and flush it off all around.

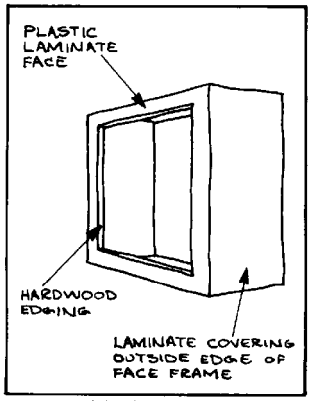


Figure 4. *With face-frame construction, a sandwiched strip of solid wood adds an elegant touch. Use melamine-coated particleboard (MCP) as the substrate, and laminate the exposed surface last to cover the rough edge of the face frame.*

Here I would recommend using MCP for a substrate and only applying plastic laminate to the outer face. Apply a large laminate sheet over the entire face frame. Cut out the opening with a router and flush-trim the edges. This is somewhat wasteful of material but gives a seamless result not usually available in mass-produced cabinetry. Here a molded edge is not called for, only wooden edges sandwiched between laminate.

If the face frame is attached to a carcase which will have an exposed side, laminate that side after applying and laminating the face frame so that the raw outside edge of the face frame is covered. This also might be an occasion for using Colorcore economically. Use Colorcore on the carcase side of the same color as the face frame. Since the exposed edge will be Colorcore, the effect will be the same as if the entire unit were made using Colorcore.

I don't recommend making the face frame of solid wood and then laminating, as the expansion and contraction of the wood may eventually cause delamination.

Other Possibilities

It is not hard to extend the techniques described above into the realm of back splashes or kitchen tables, or to the use of a decorative and functional wood drawer front, or cabinet door pull. Wood edging is starting to achieve popularity, even on industrially-produced plastic laminate cabinetry. It adds warmth to the laminate, which can be quite sterile if unrelieved. But a single wood edge, molded and stuck on the top or bottom of a kitchen cabinet as a pull is about the limit of production cabinetry. The builder doing custom work can easily top that. ■

Joshua Markel is a developer and cabinetmaker based in Philadelphia.