

Working with Japanese paper

BY ROB BROWN

Radically stronger than Western paper, traditional Japanese paper is much like a thin, easily worked piece of cloth made from 100% natural fibers. It has a long tradition in Asia of being used to give furniture texture, color, and individuality, in much the same way that a perfect piece of figured

wood is used as part of Western design.

There are three basic ways to incorporate Japanese paper into a piece of furniture. First, it can take the place of a solid panel in frame-and-panel construction. The most common form is the traditional shoji screen, but panels in doors and cabinets of any size can be constructed this way.

Second, the paper can be placed in front of a light source to highlight its texture and color. Uses include lampshades and interior window shutters.

Third, it can be used as a form of marquetry, where different pieces of paper are cut out and adhered to an existing paper panel to create a landscape or geometric design.

The only tools needed are a sharp knife, a straightedge, and some glue.

Design for available paper sizes

There are some general rules when building a piece of furniture that incorporates this paper. Make sure you know the



The world of washi

Traditional Japanese paper has been made for over 1,500 years. Known as washi (“Wa” means Japanese and “shi” means paper), it is primarily made from the inner bark of three plants combined with a liquid to produce a paste-like substance. The paste is evenly spread on a bamboo screen to

dry in the sun. This process gives unique characteristics to each square foot of paper. The range of color, texture, translucency, and design means that you can find the right type of paper for any project.

Paper usually used for shoji screens (white to creamy in color and high in strength)

The frame should be strong yet delicate

size of the paper you'll be using before you start the project; handmade paper doesn't come in unlimited sizes. If you're covering a large area, wooden dividers must be added to the frame. Known as *kumikos*, they strengthen the frame, give some protection to the paper from errant elbows and chair backs, offer many design possibilities, and give joints in the paper a place to overlap.

Because paper doesn't offer as much support as a wood panel, the frame and its joints must be engineered to provide maximum strength. Also, all four sides of the frame and any dividers must be flush at the back because that is where the paper usually is applied.

Making a standard frame-and-paper panel

Machine the parts for the frame, but don't assemble it. At the same time, mill stock for the dividers. They should be $\frac{3}{4}$ in. longer than the internal dimensions of the frame, and machined about $\frac{1}{8}$ in. narrower than the thickness of the frame to leave a reveal on the front after final assembly. Regarding width, I usually make mine $\frac{3}{8}$ in. wide, but variations are fine—different-sized projects will require heavier or lighter-looking dividers.


Before ripping the blank to create individual dividers, go to a router table to cut dadoes for the half-lap joints where the dividers overlap each other. While at the router table, cut the notches in the frame to receive the ends of the dividers. Set the height of the bit to the exact height of the dividers and clamp a stop to produce a $\frac{3}{8}$ -in.-deep cut. You can either square off the notches to accept the square end of the divider, or machine a $\frac{3}{16}$ -in. radius onto the ends of the dividers.

Because a precise friction fit is necessary for the half-lap joints and where the dividers meet the frame, use a scrap piece to set the depth on the planer. Leave the thickness of the dividers slightly proud, as they will be sanded to fit before assembly.


Attach the dividers in two installments—Glue the frame, and when it's dry, test-fit the entire grid of dividers. Glue either the horizontal or the vertical dividers (it doesn't matter which), but make sure the half-lap joints are facing the back of the screen. With

comes in rolls about 36 in. wide and between 7 ft. and 50 ft. long. For most other papers, the standard available size is about 2 ft. by 3 ft. Some papers are as small as 3 in. by 10 in., so be sure you have the paper before you design the project. Start looking at [www.japanesepaperplace](http://www.japanesepaperplace.com)


[.com/retail/retail_products/shoji_papers](http://www.finewoodworking.com/retail/retail_products/shoji_papers). There you will find papers suitable for wood-working projects that have been selected for *Fine Wood-working* readers. If you prefer to see and feel the paper before you buy it, you can check this Web site for a retail outlet near you.



Cut the joints first. It is easier to cut the half-lap joints before ripping the blank into individual dividers.



Round over the ends. Use a $\frac{3}{16}$ -in. roundover bit to profile the ends of the dividers so that they match the notches in the frame.



Notch the frame. Set the router-bit height to match the thickness of the dividers and then notch the parts for the frame. A stop block limits the distance of the cut.



Assemble the frame. Apply glue sparingly when gluing the dividers together and into the frame.

Cut, glue, and shrink the paper



Cut the paper to size. A long rule and a sharp utility knife are all that is needed to cut the paper.



Glue on the paper. Apply a thin coat of rice paste to the back of the frame and dividers. You cover a larger area with small pieces of paper by overlapping joints at a divider.

a small brush, carefully apply yellow glue to the ends of the dividers and the corresponding notches in the frames. Press the dividers in place and let them dry.

Follow suit with the rest of the dividers, but also add glue to the half-lap joints. Keep the amount of glue to a minimum; you don't need much on these small, accurately machined joints, and squeeze-out may stain the wood and take away from an otherwise fine job. If you do get squeeze-out, let it partially dry and remove it with a sharp chisel.

You don't want to get finish on the paper, so apply finish to the frame and dividers at this point. Alternatively, as with this screen, you can leave the wood in its natural state.

Applying handmade paper—When cutting the paper to size, make sure it extends at least $\frac{1}{2}$ in. onto the frame and almost the whole width of the divider. To size the paper for curved applications, I use scrap paper (newsprint works great) to get the right dimensions, then trace or cut around the paper template.

Scuff any finish on the back of the frame where the paper will be attached to give the glue something to adhere to, but make sure that you damage only the portion that the paper will cover.

Rice paste is the traditional choice because it creates a strong bond between paper and wood and is easy to clean up. It is available from the same sources as the paper. Use a $\frac{1}{4}$ -in.-wide artist's brush to apply a light, even layer—you don't want the paste squeezing out between the frame and the paper. Lay the precut paper on top of the paste and simply press the edges down to create a bond. Don't worry, rice paste acts more like yellow glue than contact cement—you will be able to reposition the paper. But don't try to get it really tight; we'll take care of this later.

The paste has an open time of about five minutes, but if it gets too dry, brush on a bit more to soften it up. With a small piece of paper, you can paste the entire wood contact area at once. With larger pieces, paste one area at a time, but make



Keep the paper parallel. It is easy to misalign a long piece of paper, so line it up with the frame or a divider before pressing it down.



No more wrinkles. After the paste has dried, mist some water onto the front side of the paper. When it dries, it will be as tight as a drum.

Designing with colored paper



Paper marquetry. The silhouette of the willow tree was created by applying colored paper to a panel of white paper already stretched onto the frame. The limited amount of rice paste won't make the paper sag.



sure that a longer piece of paper is aligned properly; you don't want to get to the other end of a long shoji panel and realize it was a couple of degrees off and doesn't line up.

The rice paste will be dry in about an hour, although waiting longer is never a bad idea. On larger panels, the paper will be a little bit baggy. Fill a spray bottle with water and lightly mist the entire surface of the paper from the front of the frame. The paper will immediately expand and wrinkle, but over the next 30–60 minutes in a warm place, it will dry as tight as a drum. Spraying the paper from the front of the frame keeps the moisture away from the paste and doesn't compromise any of its strength. The exception is on an unfinished frame where the water may discolor the wood and sanding away stains would be very difficult on the small pieces. In a case like this, try to get the paper as tight as possible when you paste it.

Repair and renewal are easy

Although the paper is tough, accidents can happen. There are two ways to make repairs. For larger repairs, cut out the damaged panel and replace it with the same type of paper. Obviously, it pays to get a little extra when you buy the paper.

If the damage is small, pull the edges of the tear together to hide the damage as best as possible. You can then cut a piece of complementary paper an inch or so larger than the damage and paste it right over the area. Or you can make a virtue out of necessity and cut a contrasting paper patch in the shape of a chrysanthemum flower or a leaf.

If your décor changes, you can transform the entire look of a piece by replacing all of the paper. Lay the frame on its face and spray water on the paper where it is pasted to the frame. After a few minutes, the paste will soften and the paper can be pulled off. Clean the frame, let it dry, and apply new paper. Try doing that with a wooden panel. □



Replace major damage. If the cat decides to sharpen its claws on the paper, cut out the damaged panel from the front.

When accidents happen



An invisible repair. Apply a new section using the same paper, and the panel will look as good as new.



Contrasting paper covers the damage. You can patch a small hole with matching paper, or you can apply a different-colored paper cut into the shape of a leaf or a flower.