

Copper windows showcase beautifully woven bands in a

Woven in Copper

by Mary Hettmansperger

Copper is one of the most colorful and economical metals on the market, and it offers possibilities galore for jewelry artists. It accepts patinas willingly, heat-treats beautifully, and is naturally colorful, malleable, and durable. You'll learn to bring character to plain copper sheet using a variety of techniques in this project.

Give copper squares the appearance of weathered, deckle-edged parchment paper using a combination of piercing and hammering techniques. Cut windows in copper to showcase a rainbow-hued woven mat hidden behind. And bring all of the pendant elements together with a solderless assembly of just three eyelets—a simple and stylish touch. Attach a pendulum-like dangle, and string the pendant with Irish waxed linen to complete the organic charm of this reversible piece.



simple but stylish pendant



A celebration of organic beauty, this reversible pendant features woven copper foil and copper sheet with a patinated finish.



▲ Give the reverse side of your pendant a completely different feel than the front.

Prepare the copper squares

Cut two copper squares. Cut two pieces of 18-gauge copper sheet metal, each about 1-1/2 in. square (2.54–3.81cm square) for the front and back pieces of the pendant.

[1] Size and texture the copper squares. Cut the copper squares to the exact finished size you'd like your pendant to be. Place the copper squares on an anvil or steel block, and use the flat side of a ball-peen hammer to forge a rough, deckle-edged effect around their perimeters. File any sharp edges, and forge them again until the edges are smooth to the touch. If desired, use the rounded side of the hammer to create a dimpled texture over the entire surface.

[2] Puncture windows in the copper squares. Place one copper square on a scrap block of hardwood. Position the edge of a chisel where you'd like one side of a window frame to be. Using a rawhide mallet, hammer the handle of the chisel to pierce the copper. Gradually move the chisel in the shape you'd like the window to be, hammering as you go. Once you've

gone around the entire shape, remove the loose piece to reveal the window. Forge the edges of the cut window to create a smooth deckle edge. File any rough edges, and forge again if necessary. Cut as many windows as you'd like.

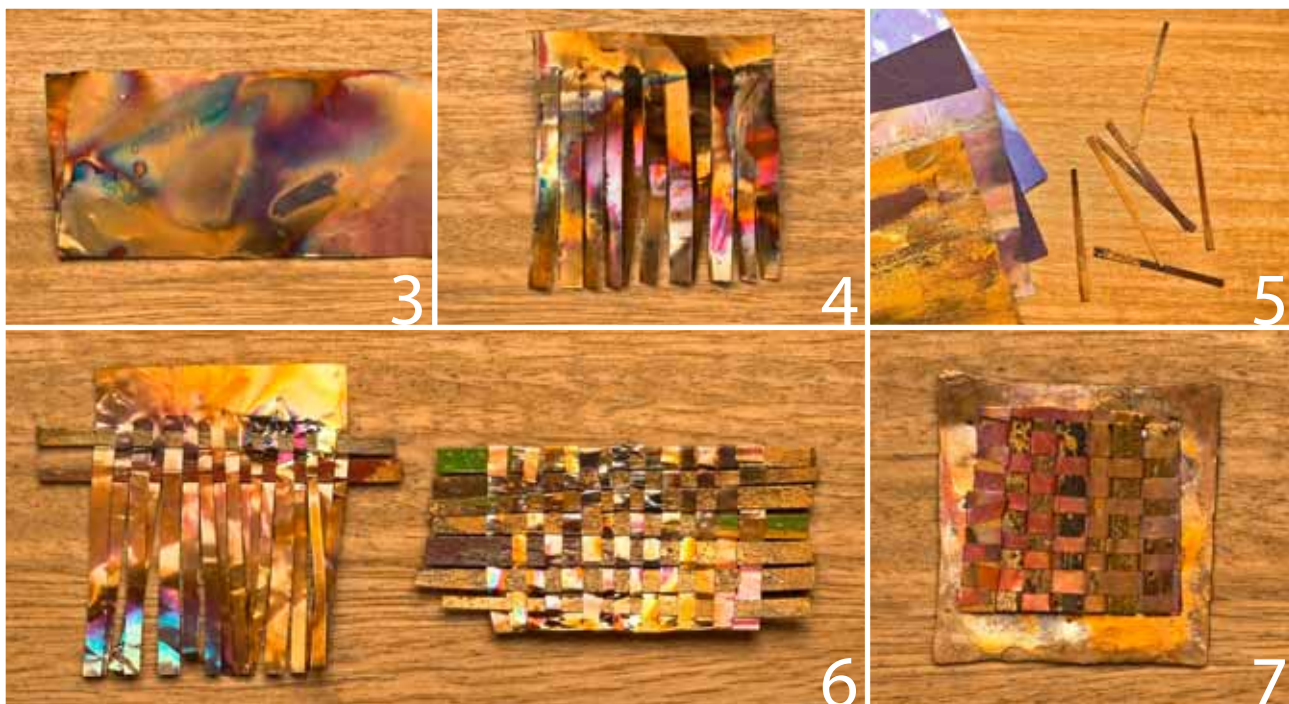
To make the necklace reversible, cut a window or a series of windows out of the second copper square. The squares do not need to match, and it will actually add interest and versatility to the piece if they don't. Set the copper squares aside.

For more information on using a chisel, see "An organic cut," *below right*.

Patinate the copper squares. Apply a heat or chemical patina to the copper squares. For a heat patina, place one copper square on a soldering pad or block. Move a torch flame over the copper until the desired color is reached. Repeat with the other copper square, and let them cool. For optional techniques for applying heat patinas, see "Heat waves," *page 60*.

The green chemical patina shown on the featured pendant was produced using a commercial solution.

Editor's Note: A salt-and-ammonia patina will yield a blue/turquoise coloration. Dissolve 2 tablespoons (29.6mL) of salt into one cup (236.6mL) of water. Paint this solution onto clean, dry



copper. Place the copper and a cup of ammonia underneath a bucket in a well-ventilated area. Check the piece every 2 hours, and reapply the salt solution as desired. The patina should develop within 8 hours. This patina will irritate skin and may flake off if the salt solution is applied too heavily.

Create a woven mat

[3] Patinate a piece of copper foil. Apply a heat or chemical patina to a piece of copper foil using the same techniques as on the copper squares. Keep in mind that foil is thinner than copper sheet and cannot be left in the flame as long during heat-treating or it will melt. Cut a piece of patinated foil slightly smaller than the copper squares.

[4–5] Cut strips of copper foil and paper. Cut lines into one side of the copper foil piece, creating strips approximately $\frac{1}{16}$ – $\frac{1}{8}$ in. (1.6–3.2mm) wide. Do not cut all the way across the piece of foil; leave the strips connected on one side **[4]**.

Cut another material (paper, fabric, etc.) to the same size as the copper foil. Painted cardstock was used in the featured

materials

- Copper sheet: 18-gauge, 2 1–1½-in.-square (2.54–3.81cm-square) pieces
- Copper foil, ½–1-in.-square (1.27–2.54cm-square) piece
- Painted paper, ½–1-in.-square (1.27–2.54cm-square) piece (or fabric, birch bark, photos, etc.)
- 3 scrapbooking eyelets, ⅛ in. (3.2mm)
- 1–2 accent beads
- Head pin or piece of wire, 2½ in. (6.35cm)
- Tube bead
- Irish waxed-linen cording, 4- or 7-ply
- Clasp (optional)
- 16-gauge wire (optional)
- 24-gauge wire (optional)

tools & supplies

- Safety glasses
- Metal shears or jeweler's saw
- Chainnose or roundnose pliers
- Patina of your choice
- Propane torch (optional)
- Toaster oven or convection oven (optional)
- Anvil or steel block
- Ball-peen hammer

- Metal file
- Block of scrap hardwood
- Chisel
- Glue (optional)
- Drying clips or clothespins (optional)
- Awl
- Leather gloves
- Drill
- Drill bit, large enough to match eyelets
- Eyelet tool

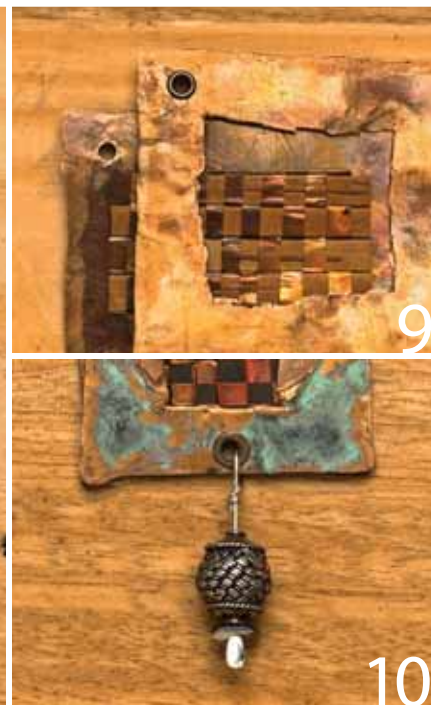
See Resources, page 92

an organic cut

Most basic metalsmithing students are taught to cut with a jeweler's saw. It takes patience (and usually many broken blades!) to become proficient with these thin, fine blades, but once mastered, they are excellent for cutting clean patterns in small metal pieces. If you'd like to deliberately give your jewelry a rough, organic feel, as displayed in the featured pendant, a chisel is the perfect cutting tool. This simple technique seems a bit primitive when one considers all the tools available; however, it's one of the best and fastest ways to achieve organic edges in your metal jewelry.

heat waves

A heat patina can be applied to copper in your oven, too. Metal thickness and dimension, temperature, and length of heating time will all affect your results, so experimentation is the best way to go. Skin oils can discolor the copper, so first clean it well with degreasing soap and water, then handle it only by the edges. Heat a toaster oven or convection oven to about 400°F (204°C), place the copper in the oven, and experiment with times from 2–7 minutes. Solid colors will form across the copper sheet in shades of magenta, bright orange, chrome, and light blue. If you'd like to match colors with approximate lengths of time, peek into the oven occasionally and record the results.



pendant; if you choose this method, remember to paint both sides of the paper for a reversible pendant. Cut this material into strips of approximately the same width as the copper foil, but cut them all the way across so you have individual pieces [5].

[6] Weave the copper foil and paper into a grid. Begin weaving the paper strips and foil strips in an over-and-under pattern. Begin each subsequent row with the opposite weave pattern to create a checkerboard appearance. When you've reached the last row, fold the foil strips back against the woven piece to hold the last paper row in place.

[7] Fit the woven piece to the copper squares. Place the woven piece between your two 18-gauge copper squares, leaving about a 1/4-in. (6.4mm) frame of copper. Trim the woven piece to the appropriate size if necessary, and position it so it looks attractive when viewed through the windows.

Glue the woven piece in place (optional). Put glue around the windows on the inside of one copper square and gently press the woven piece in place. Hold the woven piece in place with drying clips or clothespins until the glue is dry.

[8] Drill holes for eyelets. Place the copper squares on a wood block one at a time, and use a hammer and awl to mark the places you will drill for eyelets. The featured pendant has three eyelet locations—one in each of the top corners and one in the bottom center.

Wear a leather glove and hold one copper square firmly against the wood block. Drill holes through the marked locations. Use a drill bit large enough to create holes to accommodate your eyelets. Drill matching holes in the second copper square. If the holes leave rough edges or shards, either hammer the edges down or file them smooth, depending on the appearance you'd like. If necessary, drill the holes again.

[9] Insert the eyelets. Insert the eyelets and secure them with an eyelet tool, following the manufacturer's instructions.



[10] Attach the bottom dangle. Slide one or two beads on a 2½-in. (6.35cm) head pin or piece of wire with one hammer-flattened end. Make a wrapped loop (see Basics, *page 84*) to attach the head pin to the bottom eyelet.

[11] Add a necklace cord. Center a tube bead on 4- or 7-ply waxed-linen cording. Thread the ends of the cording through the eyelet holes in the top of the pendant, front to back. Then thread the cording back through the tube bead, going in opposite directions so the ends are on opposite sides from where they began. Cut the cording to your desired necklace length. Tie a knot for closure if it is long enough to slide over your head. If you choose a short length, attach a clasp for closure. **A**

a different spin

If you'd like to challenge yourself, give this design variation a try. This version is achieved by framing the copper squares with three pieces of 16-gauge wire, rather than by using eyelets. The first piece of wire is shaped like an arch; the second, a straight line; and the third, a squared U-shape. Hammer the ends of each of these pieces flat, and file them into paddle shapes.

Drill holes around the perimeter of each copper square. Tightly coil 24-gauge wire around each individual 16-gauge wire piece, simultaneously threading 24-gauge wire through the holes in the copper squares as you go. "Sew" the U-shaped wire to the right, bottom, and left sides of the pendant, and fasten the straight wire flush with the top. The hammered ends should intersect at the corners. Position the arch-shaped wire above the top of the pendant and fasten it at the intersection of the other two wires, creating a splayed effect.

