

INTERMEDIATE

Make a Threaded Connection in Metal Clay

Create threaded components to use in finished designs.

by Wanaree Tanner

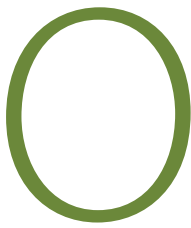
This pendant was formed and fired in three different sections: the cap (with the male component), the barrel (with the female component), and the base. 2¼ in. (57 mm) high.

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JEWELRY MAKING START TO FINISH

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One of my favorite places to ponder creative solutions to construction problems is our local hardware store. This threaded technique is the result of one of those hardware-store “Eureka!” moments. It occurred to me that I could use threaded plumbing parts to create threaded metal clay components. The thread components could then be incorporated into a design, providing an innovative way to connect two parts of a finished piece.

The pieces I used for this demonstration are rather large because I used COPPRClay and needed to compensate for its 20% shrinkage rate. You can practice using clays with lower shrinkage percentages and smaller couplers to make more delicate pieces.

Prepare the clay. Knead 30 g of copper clay into a smooth ball.

NOTE: You can incorporate a little water or olive oil into the clay [1] to prolong its workability. Move through the steps as quickly as possible until you have placed the clay on the copper plumbing coupler.

Cut out a clay ring. Roll out the clay to at least $\frac{3}{8}$ in. (10 mm) thick. Use a 1-in. (25.5 mm) circle cutter to cut a circle from the clay. Remove the excess clay [2]. Use

a $\frac{1}{2}$ -in. (13 mm) circle cutter to cut a hole in the center of the clay circle, creating a ring [3].

NOTE: The seamless shape makes the threading smooth and prevents a seam from separating during drying and firing.

Create the female threaded component. Lightly spray olive oil over the threading on the male half of a copper plumbing coupler. Gently work the clay ring over the male coupler, pressing the clay down over



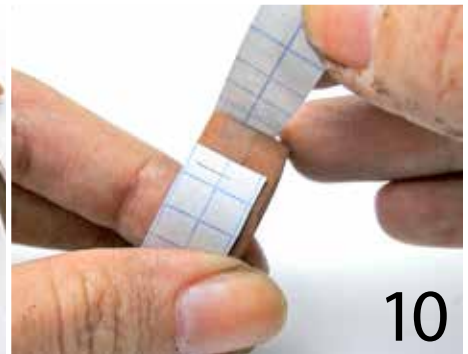
materials

- Copper metal clay: 30 g

tools & supplies

- Copper plumbing coupler, male and female: $\frac{3}{4}$ in. (19 mm)
- Circle cutters: 1 in. (25.5 mm) diameter, $\frac{1}{2}$ in. (13 mm) diameter
- Graph paper
- Stainless steel firing mesh
- Tape





how to make copper metal clay paste

Start with a lump of copper clay that is about 5 g. Pinch off small pieces of clay and place them in a jar with a tight-fitting lid.

Spray water onto the clay to moisten it. Put the lid on the container, then set it aside for 15–30 minutes.

Remove the lid and use a palette knife or other stiff tool to stir the clay. If needed, add a little bit more water.

Add a couple of drops of lavender oil to the mixture. Use the palette knife to mix the oil into the paste.

the threading [4], and squeezing the clay all around the coupler to prevent bunching and gapping [5]. Set the piece on a mug warmer until the clay is semi-dry.

NOTE: This half, although formed on the male coupler, becomes the female half of the metal clay coupler.

The clay will shrink while drying. If the clay is left to dry completely on the male coupler, it will not shrink to a compatible size. Very carefully, unscrew the clay ring from the male coupler. Allow the ring to dry completely.

Create the male threaded component.

Repeat the steps to make a second clay ring. Lightly spray olive oil on the threading of a female copper plumbing coupler. Work the clay ring inside the female coupler, pressing the clay so it takes the shape and depth of the threads [6]. Set the piece aside to dry until semi-dry. Remove the clay from the female coupler and let the clay ring dry further until it is completely dry [7].

Size the threaded components. Carefully screw the male and female halves together. Use a craft knife to score the rim of the female half $\frac{5}{64}$ – $\frac{1}{8}$ in. (2–3 mm) taller

than your desired final height of the finding [8]. Brace the male half with your fingers and slowly unscrew the pieces. Be patient, and don't force the pieces.

Use a craft knife to gently shave the clay away from the female half until you reach the scored line [9]. Repeat to trim the male half so it equals the height of the female half.

Refine the outside. Place the female half on your work surface and assess the outer surface. If needed, trim or sand the surface of the clay until it is smooth. Be careful not to trim so much that you carve through to the threads.

SAFETY NOTE: Some people find copper clay dust irritating. You may want to wear a dust mask while sanding.

Adjust the height. Cut a strip of graph paper that is the desired height of your finished component. Tape one end of the strip to the female half, and wrap the strip around the ring until the strip overlaps [10]. Make sure the graph lines line up, and use tape to secure the strip.

Place a piece of sandpaper flat on your work surface. Working in a figure-8 motion, sand the clay down to the edge of the graph paper [11].



how to fire a COPPRclay piece with threaded findings

For my piece, I used COPPRclay, which shrinks 20% when fired. Often, distortion will occur, particularly with larger forms. The distortion can be a result of uneven kiln temperatures and carbon firing medium disrupting shrinkage of the form. My piece is a barrel-shaped vessel. I used paste to place a dome on the top of the male half of the threaded component and to set the female half of the threaded component inside the barrel, then allowed the sections to dry completely. I made a second dome for the base of the vessel.

Prepare your firing pan and add the pieces. Fill your firing pan with 1 in. (25.5 mm) of carbon. Place the two domed pieces on top of the carbon, with the domed sides facing down. Set the barrel vertically on top of the carbon.

Fill the firing pan. Place a piece of stainless steel firing mesh cloth over the clay pieces to keep carbon from filling the barrel. Fill the rest of your firing vessel with carbon firing medium.

Fire the pieces. Place the firing pan in the kiln on 1-in. (25.5 mm) kiln stilts. Set the following firing schedule to ensure complete heat saturation: Ramp your kiln at 1100°F (593°C) per hour to 1750°F (954°C); hold for 3½ hours.

Assemble the pieces. After the kiln has cooled, remove the pieces from the carbon, but do not finish or tumble them. Set the lid of the vessel aside, and assemble the pieces that make up the vessel body. Overfill the joints with copper clay paste (see “How to Make Copper Metal Clay Paste, *previous page*). Allow the vessel body to dry completely.

Fire the vessel. Place the vessel open-end up in the firing pan with the carbon still in place from the last firing. Fill the vessel with carbon to help support the joined pieces. Add an additional ½ in. (13 mm) of carbon over the piece, then place the lid on the firing pan. Ramp your kiln 1500°F (816°C) per hour to 1700°F (927°C) then hold for 3½ hours. Allow the kiln to cool to room temperature. Remove the pendant.

Finish the piece. Use 400-grit wet/dry sandpaper to sand the joints smooth. Refine with 600-grit wet/dry sandpaper, then polish by hand or tumble.

Remove the graph paper, and screw the two clay halves together. (Work slowly so you don’t distort or wear down any threads.) Sand the male half even with the female half [12].

Your findings are ready to insert into your vessel. To create the pendant as shown, I formed and fired the clay in three different sections: the cap (with the male component), the barrel (with the female component,) and the base. (For basic firing instructions, see “How to Fire a COPPRclay Piece with Threaded Findings,” *right*.)



Threaded findings make screw-top vessels possible; Tanner’s vessel is a memory piece, and contains a miniature photograph.