



KILN FIRED BEAD

**Materials needed (\*available from Enamelwork Supply):**

- |                                         |                                          |
|-----------------------------------------|------------------------------------------|
| Bead mandrels* or music wire            | Kiln                                     |
| Stainless steel mesh*                   | Cotton swab                              |
| Firing rack*                            | Canned air (optional)                    |
| Copper beads*                           | Colored photocopy paper                  |
| Scalex* or bead release                 | Heat lamp (optional)                     |
| Ginbari foil*                           | Hair dryer                               |
| Petroleum jelly                         | 1" diameter dowel or pipe                |
| 16 gauge steel wire                     | Stapler                                  |
| Porcelain enamel*                       | Paper punch (optional) or small scissors |
| Penny Brite* or sandpaper and dish soap | Wire snips                               |
| Measuring cup, spoon, covered container | Reamer or small drill bit                |

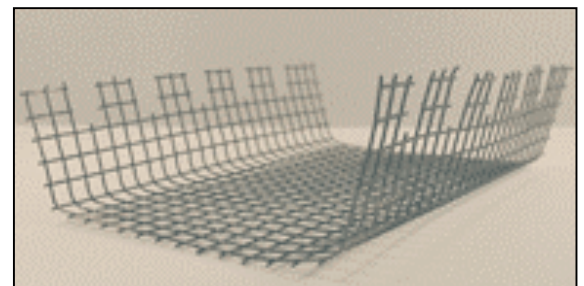
**(1) Preparation**

• Use a seamless copper bead. (Seamless beads have no solder, which makes the enameling easier.) If necessary ream out the hole with a bead reamer or a small drill bit so that it fits easily on a mandrel (see below). Remove the oxidation and grease from the bead by washing with Penny Brite or abrading with 320 sandpaper and dish soap. Rinse well and check to see that water sheets, rather than beads up, on your bead. This will show that the bead is grease free. Dry it off. If you have canned air, blow it through the hole to remove water from the inside. Or just blow in it. Or force dry it with a hair dryer. Hold the bead with something other than your hand so you won't get burned.



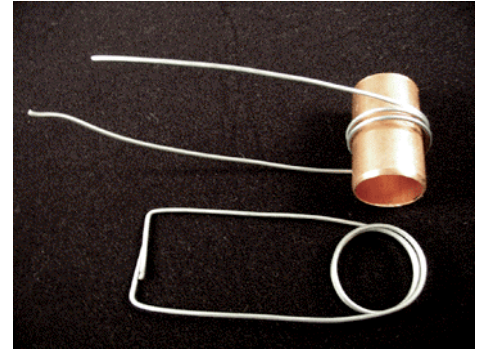
• Make or buy a bead mandrel. Stainless steel music wire makes good mandrels and comes in many different diameters. Take your bead(s) to the hardware store to make sure you find wire that fits. (In a pinch, old umbrella spokes or sections of metal hangers with the lacquer coating removed can be used for mandrels.) Cut the music wire into  $\approx 6$ " pieces or a length that fits on your mandrel rack (see below). Make sure the bead mandrel fits through the hole of your bead. Coat the mandrel with Scalex or a bead release compound and dry it before using.

• Bend a piece of stainless steel, welded mesh into a flat-bottomed U shape. This bead rack will hold the ends of the bead mandrel and keep the bead up away from the firing rack so that the enamel does not touch.



Do not use hardware cloth - it is soldered and will fall apart in the kiln!  
If you do not have welded mesh you could use a purchased bead rack or prop the ends of the mandrel over two overturned trivets.

- Make the bead tweezers. Cut a piece of 16 ga. steel wire about 18" long, find the middle point and twist the wire 2 1/2 times around a pipe, a dowel or something cylindrical that's about 1" in diameter. Straighten the two loose ends and make them parallel. If one "leg" is longer than the other, clip it off. At about 1 inch from each end, bend the wire so that the ends face each other. It's O.K. if the ends overlap slightly.



## (2) Applying porcelain enamel

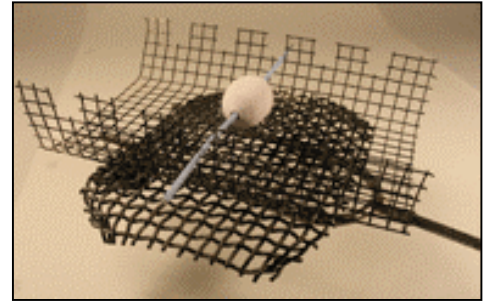
- You can purchase porcelain enamel in either a dry or wet form. Choose a color that will contrast with the silver ginkbari foil. Mix the dry porcelain enamel to the proper consistency by stirring  $\approx$  1/3 - 1/2 cup water into each 8 oz. of dry enamel. If you have minerals in your tap water, use distilled water. The wet form of porcelain enamel just needs stirring. You are aiming for a consistency that will thinly coat a metal spoon while the excess runs off the end and does not "glob up". Porcelain enamel must be stirred before every use. Keep the porcelain enamel in a container with a tight fitting lid. Keep it covered when not in use so that it will not lose as much water through evaporation.



- Stir the enamel. Place the clean bead on the bead tweezers and dip it into the wet porcelain enamel. Let the excess enamel drip off back into the container. Gravity will pull the wet enamel downward so hold the bead in different directions so that the enamel will more evenly disperse. Keep the bead moving and dry the liquid enamel with a hair dryer until the enamel no longer runs. The enamel will turn a lighter color as it dries. While the bead is still on the tweezers support the tweezers so that the bead isn't touching anything and finish drying it under a heat lamp, on top of a warm kiln or under a regular lamp. It will look lighter and more powdery when it is completely dry. At this point you can handle the bead - let it cool first if it is hot. Remove the bead from the tweezers. Gently remove any enamel bumps with your finger or a dry paint brush and if necessary gently remove any unwanted enamel from around the holes with your fingernail and from inside the holes with a shish kebob stick or pointed tool. Don't worry if you scrape all the way through the enamel, you will be coating it again.



- Skewer the bead on a mandrel that has been coated with Scalex™ or any bead release and suspend the mandrel across a bead rack. Place the bead rack on a firing rack. Pick up the firing rack with a firing fork or spatula to place it in the 1550° - 1600° F. pre-heated kiln. Tip: when you open the kiln door you will lose 50 - 100 degrees so pre-heat to a temperature greater than that needed for firing.



- Fire  $\approx$  2 - 3 minutes at 1500°F. If you fire lower than this the enamel may "crawl" (pool up in some places while pulling away from others). Cool. Gently tap the bead and blow out the loose fire scale inside. This should give you a thin, even coat of enamel. If there are any big lumps you can grind them down with sandpaper (or other abrasives) and water before recoating. Repeat the entire undercoating sequence to get a good solid coat of enamel. Keep the left over enamel tightly covered and use it again for other projects. You may have to add water to adjust the consistency.

### (3) Adding the Foil Decoration.

- Place a piece of fine silver ginbari foil between two pieces of photocopy-weight paper. (I like to use colored copy paper. The contrast in color with the foil makes it easy to separate out later.) Secure the foil "sandwich" with a few staples to keep the sheets from sliding. Draw or trace a simple design shape onto the top paper and cut it out with small scissors. OR punch shapes out of the foil sandwich with a paper punch.



- Rub petroleum jelly thinly and evenly over the bead. Secure the bead in the bead tweezers. Weight the handle of the tweezers between heavy books so that the bead is suspended. Separate the pieces of copy paper from the foil pieces. Use a damp cotton swab to lift and position your foil pieces on to the enameled surface.

- When the foil is all in place roll your finger over the foil shapes so that they tightly conform to the curve of the bead. The foil will only adhere where it firmly touches the enamel.



- Fire at  $\approx$  1500° F. for  $\approx$  2-3 minutes. Cool. Blow out the firescale that formed inside the bead.

Enjoy your beautiful bead!

