

PRECISION PIERCING

by Eric Stearns

Pushing the limits of clay, both in the form as well as the finish, inspires me to create; raku firing tests the limits of those extreme forms. I purposefully make every piece as delicate and fragile as possible while celebrating the robust bonds that are inherent in each molecule of clay. Influenced by the patterns and styles of Acoma pottery, I explore the positive and negative spaces within the design and the clay itself, then build depth with the glazes. Precise application of geometric principles is exhibited in each step.

Throwing the Form

Vases and platters lend themselves to piercing. A shallow bowl surrounded by a wide, flared rim allows for a striking decoration area. The impact of the negative or unperforated space is just as important as the pierced areas.

When throwing work for piercing (1), it's important to keep the thickness of the walls to about $\frac{1}{4}$ inch—thin enough for the X-Acto blade to make a clean cut, but not so thin that it dries too quickly.





1 Throw a thick cylinder. Widen the rim while keeping the base small.



2 Use a long rib to shape the gentle flare in the rim.



3 Use a decorating disk and a ruler to create marks for a grid.



4 The finished grid before making decisions about the pattern.



5 Use a needle tool to create an outline of the design in the grid.



6 Use an X-Acto knife to cut out the diamond shapes.

I use an Ultimate Edger rib to carefully compress and round the rim, adding strength and substance to the structure of the piece. A long metal rib helps smooth and shape the gentle flare of the rim (2). As I throw the shape, the finished surface design comes together in my mind. The precision of piercing necessitates planning and deliberation before I ever finish shaping the clay.

While the piece is still centered on the wheel, lightly incise the horizontal lines. There are 13 horizontal lines (or concentric circles) on this particular bowl (see figure 3), but the final choice depends entirely on the area available. Then, using a small decoration disk, make marks to divide the radius of the piece like spokes on a wheel, subdividing each segment in half several times to achieve up to 80 divisions (3 and 4). Fewer lines create a more open architecture with larger piercings, whereas more lines allow for smaller piercings within the composition. A tighter pattern strengthens the structure of the piece while at the same time adding to the airy framework.

Controlled Piercing

While I work, I consider how the line of piercings will flow from the interior bowl to the rim as well as how light and shadow will look going through the cutouts like a kaleidoscope. Each individual pierced space becomes part of a larger network of piercings to create new shapes throughout the sculptural piece. Using a needle tool, lightly create an out-

line of the design on the grid (5). I begin piercing as soon as the piece can be flipped over and immediately after trimming. Each side of the diamond-shaped piercing is made with exactly two slices from an X-Acto knife to ensure a smooth edge through the entire thickness of the clay wall (6). A thin, sharp blade is critical to produce a clean cut. It's crucial to work quickly at this point.

Note: Leave the cutout pieces in place until the entire design has been pierced to keep the piece from drying unevenly or too quickly (7). Clean up the un-pierced areas with a semi-flexible yellow rib (8), prior to poking each diamond cutout through the pot (9). **Tip:** When piercing larger pieces, I control the drying by placing a plastic bag over the form, working through a window cut into the bag.

After piercing, smooth the entire piece with a finishing sponge to erase some of the grid marks, clean up the piece overall, and blunt any sharp areas created along the cut edges (10).

Dry the piece slowly to manage any stress cracks on the fragile clay. After bisque firing to cone 08, put on appropriate respiratory protection and dry sand the entire piece with a 120-grit diamond hand pad. Completely wash off any residual dust before glazing.

Glazing and Decorating

The patterns within the pierced sections of the rim of a bowl emerge from personal emotions and experiences. Beyond that,

I also survey how the pattern interacts with that specific form and what kind of energy and emotion it will present to others. Digital tools like Adobe Photoshop help me analyze how different glaze and color combinations might affect both a pattern as well as an overall form.

I use 1/8-inch wide graphic-art tape (1/16 inch on smaller pieces) as a tape-resist method to ensure clean, crisp lines between the unglazed and glazed surfaces and further accentuate the interplay of positive and negative space (11). Clear crackle glaze underscores the appearance of fragility within the form while

selected areas of brightly colored solid glaze add strength and cohesion to the design. A textured glaze adds further depth and dimension.

Allow the glaze to dry thoroughly before removing the tape. The unglazed areas protected by the tape will turn black from the carbon produced during the raku reduction, enhancing the interaction of positive and negative space.

Raku Firing the Form

Before loading the kiln, select the appropriate metal reduction chambers for the piece. When raku firing a vase or vessel, the piece



7 Leave the piercings in place until all of the diamonds for the pattern are cut.



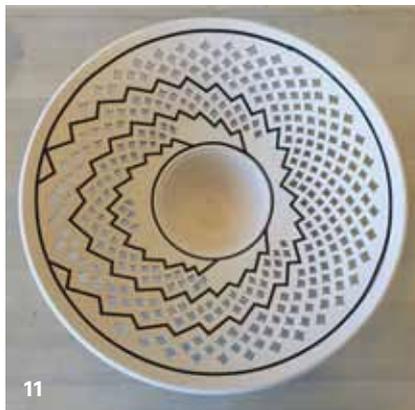
8 Use a semi-flexible rib to remove the grid marks from the unpierced areas.



9 Remove all of the cutout diamond shapes by poking them with a stick.



10 Smooth the entire piece with a finishing sponge to blunt any sharp edges.



11 After the bisque firing, use graphic art tape as a resist for the glaze.



12 Fire the piece to 1805°F. Then, let the kiln cool to 1430°F and remove the piece.



13 Place the piece on a sand pit and then cover it with newspaper.



14 After the newspaper ignites, tightly cover the piece with two nested, metal tubs.



15 After the piece cools, I use a blowtorch to clean up any carbon fuming.



CRACKLE GLAZE

Cone 07

Laguna Borate	80 %
Nepheline Syenite	20
	100 %

Add: Bentonite 3 %

I use a gum solution in small amounts, as needed, and do not add it to the full batch of glaze.

Adversity, 16 in. (41 cm) in diameter, white stoneware, glaze, raku fired.

should fit inside the reduction chamber with just enough space to safely allow gloved hands to clear the piece without excess room. A wide-rimmed bowl or platter is more easily reduced when the metal tub is inverted over the top, but space around the piece should be minimal to establish a good reduction atmosphere.

I fire in an electric kiln because it has a more evenly controlled firing and achieves a cleaner neutral atmosphere that prevents solid colored glazes from forming black speckles. Firing only one piece at a time, a shelf is elevated up on posts to bring the piece as close as possible to the top for easy unloading. I program a cone 07 (1805°F/1011°C) firing into my automatic kiln controller, firing as fast as possible. Depending on the size of the piece and the size of the kiln, the firing takes 2–5 hours. I let the kiln cool naturally to 1430°F (777°C).

This particular form necessitates a wide galvanized wash tub for reducing. A sand pit is created on a concrete floor, larger than the diameters of both the inner and outer reduction tubs (see figure 13). I use the lid from a metal popcorn tin to create a flat surface in the center of the sand for stability. A single half sheet of newspaper placed on top of the lid is sufficient for smoking the piece from the bottom. A soft insulating firebrick is set up on the concrete close by, raised high enough so I don't have to bend over. Have multiple contingency plans in place for pulling the hot piece from the kiln: plan how to safely proceed if a piece shatters when removing it from the kiln, if your gloves stick to the glaze, if the kiln lid doesn't lock in place while it's open, or even if something (including the artist) catches fire. Make sure every possible path is clear of objects and spectators and emergency equipment is available.

I suit up with a long sleeved shirt and long pants made from non-flammable materials, Kevlar mittens, and a welding mask with a green-tinted faceplate that protects my eyes while still letting me see the piece. When the digital readout on the kiln controller cools down to 1430°F (777°C), unplug the kiln, remove all of the peep hole plugs, then securely prop open the lid of the kiln. I find that 1430°F (777°C) is a good temperature because the glaze I use is not tacky enough to stick to the gloves.

Using your gloved hands, reach into the top of the kiln, remove the piece, and place it on soft insulating firebrick (12), maintaining direct contact with the pot for less than five seconds. Close the kiln. Gently blow across the surface of the piece. The glaze pings as the crackles develop. Once the crazing develops to your satisfaction, use Kevlar gloved hands to quickly move the piece to the newspaper-topped popcorn lid (13) and place two opened sheets of newspaper on top of the pot. After making sure a flame ignites (14), immediately cover it with a metal tub, pushing the tub into the sand to make a good seal. A second, slightly larger metal tub is nested on top, again wedging its rim into the sand. All of this has to happen prior to the piece cooling too much. If the temperature falls below 1400°F (760°C), the piece won't be affected by the carbon created in the reduction chamber.

It's critical to starve the piece of oxygen for at least 45 minutes to an hour for the exposed clay body to reduce to a dark gray or black. The double-layer reduction chamber does a more complete job of smoking the piece. **Note:** If using a garbage can as a reduction chamber, place one or two smaller metal cans over the piece to create a nested reduction chamber within the larger can. This enhances the reduction effects and brightens the appearance of white areas. If I didn't reduce so heavily, the piece would take on a peach-colored cast. I never use a post-reduction water bath to crash cool the piece due to the delicate nature of the forms.

After the Firing

After cooling, I carefully clean up any carbon fuming with a handheld propane blowtorch—far easier than scrubbing the pot (15). If you don't have a torch, clean the pot with a damp cloth. A wire brush cleans up any stubborn newspaper that still remains from the reduction process.

Eric Stearns is a ceramic artist and educator in Nebraska. He has been teaching ceramics at Doane College in Crete, Nebraska, since 2009. To see more of his work, visit www.stearns ceramics.com.