

Pottery Making

Your Resource for Ceramic Techniques

Illustrated

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Take the Plunge



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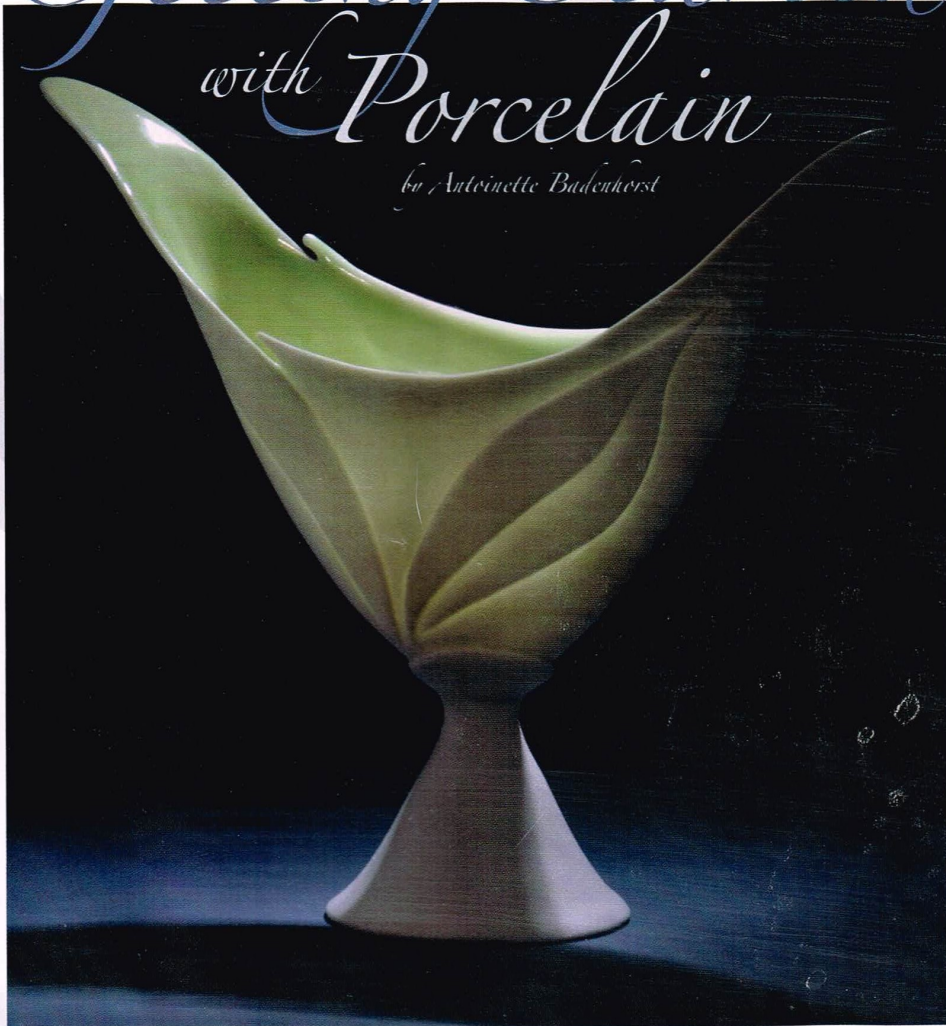
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Getting Started with Porcelain

by Antoinette Badenhorst

Photo Credit: Koos Badenhorst



Porcelain is desired for its purity, delicacy and translucency, but it's also the perfect body for carving and bringing out a color palette.

Choosing a white clay body might look like a simple choice, but because of the different working characteristics between stoneware and porcelain, it's worth exploring the options first (see "Supply Room", pg. 10).

For the right potter, the joy of working with porcelain always overshadows the potential sorrows that come along with it, but the condition is that you understand the medium and get in sync with it. As I've heard potters say before: "I don't know what it is about porcelain that keeps me coming back for more punishment, but it's real . . ."

A Different Material

Porcelain can be worked like other clays, but when fired can reach a state of extreme whiteness, becomes vitreous and often translucent, similar to glass. When tapped on, it has a ringing sound like a bell.

Porcelain in its raw plastic state is very fine, smooth white clay that offers a canvas for color and textures—from a very smooth white surface to the finest and most elegant textural detail.

The whiteness of porcelain allows for coloring the clay itself, painting stains and oxides onto its surface, or glazing it with an

outcome of brilliant and often dramatic colors.

Efficiently-fired porcelain has a glass-like character and becomes vitreous and watertight even when left unglazed. The transition between the fired porcelain and the glaze layer is also less distinct than in a comparably fired piece of stoneware. Well designed glazes can be just as hard as the clay and are basically scratch-proof.

This hardness and blurring of the interface between clay and glaze are of tremendous value to the production potter, since these qualities limit some

trouble with glazes, particularly where chipping and leaching are concerned.

Translucency is obtained under specific circumstances. High percentages of glass forming ingredients like silica and feldspar in porcelain—in combination with thin walls and efficient firing—enhance translucency, but might also increase the difficulty to form and shape it. To some potters, translucency can add to the decorating process, but many potters choose an easier working, plastic clay body that has most of the other qualities of porcelain.

Throwing a Tall Bottle

Throwing tall forms is a challenge with any clay body, and I recommend you practice throwing tall forms using a smooth stoneware clay first. Once you have the basic principles down, it's easier to apply them to porcelain.

To get started, take 2 lbs. of porcelain and prepare a ball for throwing. The process described here is a somewhat different approach to the one typically used but promises to be successful.



1 The dome width predicts the width of the base.



2 Start lifting the clay wall by making a dent at the bottom.



3 Imagine the clay to be a wave that gets pushed upward.



4 Keep your non-dominant arm parallel above the pot as you thin the clay.



5 The clay wave diminishes as the walls become thinner and the cylinder taller.



6 Repeat the dent and wave process at least 3 times.

The width of the cylinder is determined by the width of the dome from which you open the clay; the wider the diameter of your dome, the wider the base of your pot (*figure 1*). Once centered and opened, start by indenting the exterior of the clay where it meets the wheel head or bat (*figure 2*). Imagine pushing the clay upward from below rather than pulling it from above. It's like water in the ocean that gathers to form a wave before it breaks on the shore (*figure 3*). Let the dominant arm and hand control the clay on

the outside of the cylinder from a secure position on the side of your body or knees. The non-dominant arm hangs in the air, above and parallel with the cylinder, guiding the pot upward in the direction of the elbow and controls the clay on the inside (*figure 4*).

Repeat this process a few times. Each time, less clay becomes available to move upward into the wall (*figure 5*). Pushing the clay up from below, rather than pulling it, eliminates the excess ring of thick clay around the bottom or foot area of

the cylinder. Repeat this process at least three times, or until the clay is thinned out (*figure 6*). When you feel the cylinder starting to swing, or that you start losing control, slow down the wheel somewhat and collar the clay back in to regain control (*figure 7*).

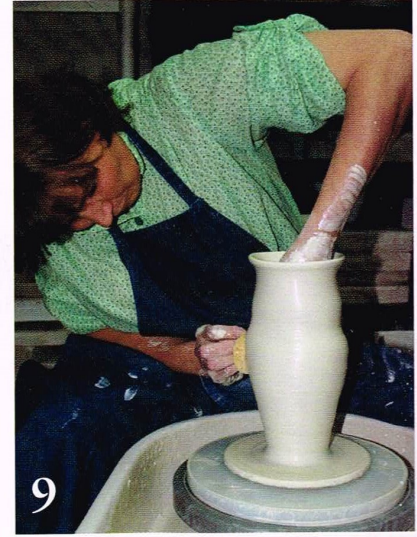
Once the desired height is reached, continue to define the shape of the object you intend to make (*figure 8*). For shaping forms like bottles, the non-dominant hand pushes from the inside, while the dominant or outside hand supports the clay (*figure*



7 Collar the cylinder to regain control if the top becomes off centered.



8 After creating the cylinder, start defining the shape.



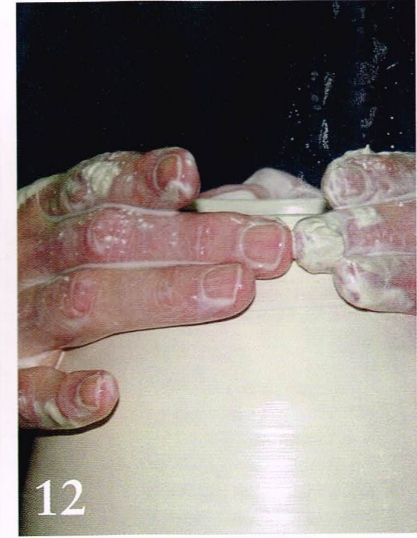
9 Push the clay from the inside while the dominant hand supports the clay on the outside.



10 Use rubber kidney ribs to remove excess slurry.



11 Use two rubber ribs to help in the final thinning, or prior to collaring the neck.



12 For a bottle, begin collaring the upper rim by encircling it with your hands.

9). Use rubber kidney ribs to remove excess slurry (*figure 10*), then use them to help in the final thinning of the form for a cylinder or bowl, or for a bottle form before starting to collar in the neck (*figure 11*). To bring the neck in, repeatedly collar then thin out the top third of the cylinder. Use all your fingers to support and guide the clay inward, slowly closing the opening between your fingers as the piece narrows (*figure 12*). Next, thin out this section, throwing with your fingers angled toward the vertical center to

further narrow the form (*figure 13*). Repeat the collaring and thinning process until the opening is the right diameter (*figure 14*), then create the neck of the bottle with the remaining clay (*figure 15*). Thin the neck with a rib on the outside and your finger supporting on the inside, then finish the exterior of the form with a rubber kidney rib (*figure 16*).

Allow the finished piece to set up to leather hard on the bat then trim it right side up while still on the bat (*figure 17*) before turning it over on a chuck and trimming a foot ring.

When adjusting a piece, work on thick foam cushions and chucks to protect the thin neck area and stabilize rounded forms. Some of these foam chucks are custom cut to fit the shape of the pieces I have in progress.

Tips for Working With Porcelain

1 Always wedge clay from a few hours to up to a day before using it to make sure that the water content is evenly distributed throughout the clay ball. This also helps to orient the clay particles into a circle or spiral. Al-



13 Thin this collared area by angling your fingers towards the vertical center to further narrow the form.



14 Repeat the collaring and thinning process to narrow the top until the opening is the right diameter.



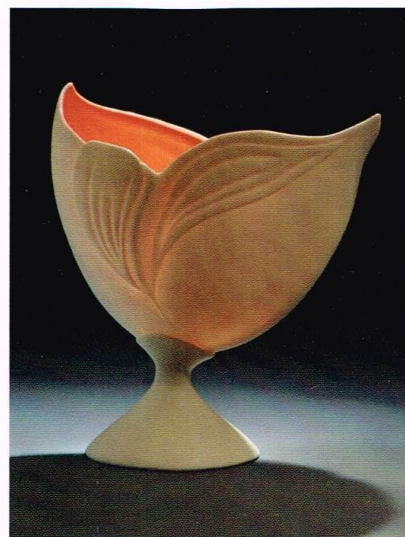
15 Create the neck of the bottle by thinning and collaring the remaining clay with your fingertips.



16 Thin the neck using a rib on the outside and a finger supporting the inside.



17 Finish the opening and the exterior surface of the form with a rubber rib.



Finished, carved porcelain vessel by Antoinette Badenhorst.

though aged clay is stiff during the first few wedges, it's much better than freshly made clay and it quickly softens. Allowing the porcelain to rest after it's wedged is important, because it tends to fatigue easily.

2 Pay special attention to centering and always cone the clay to get all the clay particles lined up. Many potters consider coning as just another way of wedging, but in many instances porcelain reminds me of the fairy tale of the princess that could not sleep with a pea under her mattress. The slightest little lump or unevenness can force you back to the beginning.

3 Handle the clay as little as possible to limit it from getting fatigued. I manipulate the wedged ball into a pear shape and place it with the small end downward on the wheel head to take advantage of the circular movement that started forming during wedging. I further define the lineup of clay particles through the coning process.

4 Porcelain is normally thirsty, absorbing water quickly, and collapses easily when too much water is used. Even a more plastic porcelain clay body functions better with less water. Adding a spoonful of vinegar in the throwing water gently defloculates the clay and helps in lubricating the clay. Since porcelain shrinks more than other clay bodies, using less water limits the problems related to shrinkage.

5 Porcelain cracks easily for different reasons. If basic rules are important for working with other clay bodies, it becomes of the utmost importance to porcelain. Uneven thickness in clay walls and attaching pieces of uneven dryness will result in cracking. Cracks in the bottom of a form are usually caused by uneven thickness throughout and/or improper compression. Some cracks in the bottoms are caused by water left inside, which weakens the bottom. Cracks on rims are usually caused by too much pressure applied when trimming the foot. Using a foam bat on the wheel

head while trimming absorbs the shock and eliminates most rim cracks. You can also prevent excessive pressure on fragile pieces by using sharp tools. Metal kidney ribs and Surform blades are some of my most important trimming tools.

6 Fill a spray bottle with water and use it to keep the pieces damp as long as is needed while you're working on them. Be careful as it takes some training of the hand and eye to prevent delamination of walls when spraying semi-dry pots to rehydrate them. Every porcelain body is different and needs to be evaluated separately.

7 To be safe, never leave freshly thrown work in the open air longer than 15–30 minutes, no matter if you are working in Mississippi or Arizona.

8 Here are two simple systems for keeping unfinished pieces leather hard for weeks while you work on them. Invert a lidded food container, set the pot on the inverted lid and place the container over top of it to seal the pots in while they are in process.

Make a damp box by taking a plastic storage box, and pouring an inch or so of plaster into the bottom. After it cures, dampen the plaster slab and it will slowly release moisture into the air within the closed container.

Design Considerations

When working with porcelain, there are specific things to bear in mind in the design stage that have a direct effect when firing a piece. Porcelain slumps easily so avoid large horizontal areas that are not supported. Wide domed lids, wide rimmed bowls and plates, handles and spouts should have an angle of at least 45° built into the design. Some pieces will even split or separate during the final firing if unsupported. I use different systems in the kiln to support my work. It's an ongoing process of planning and improvisation, since my work is one of a kind and using supports only works if the area to be propped up is unglazed.

Porcelain utilitarian work is normally the same thickness or slightly thinner

than stoneware, but it's still important to be aware of possible slumping and to design works accordingly.

Firing Considerations

Because porcelain fluxes and starts to melt somewhat at its peak temperature, any supportive materials need to be dusted with a refractory material such as silica or calcined alumina. The same refractory materials are necessary to prevent lids from sticking to pots. I found that regular kiln wash is not enough to prevent my pots from sticking, so I wet each piece and dip it in a thin layer of silica that I can wipe off after the piece is safely fired.

Dimples in fired porcelain may be caused by a very open, less plastic clay body or by gasses that are either created by burn-off from plasticizers or other organic materials that might be trapped in the clay. Slow firing, soaking bisqueware for 30 minutes and a soak hold when the final glaze firing temperature is reached are all precautions you can take to allow these gasses to escape. For a very open clay body, it's sometimes useful to dampen the pieces slightly before glazing. Be aware that if the piece is too damp (which happens quickly with thin work), it can't absorb as much water from the glaze solution, and so the glaze coating will be too thin.

If you're having problems with cracks forming during the firing, they can be prevented by down firing the kiln, which helps to cool pieces (especially thin ones) slowly.

I consider my porcelain work as a discovery; one that takes me to all different and interesting places. It suits my personality and my passion. I invite you to join me in this journey. Maybe you will find the same joys as I do. ■

Antoinette Badenhorst has worked with translucent porcelain since the early 90's. She leads workshops, presentations and demonstrations both in the U.S. and internationally and has written articles on pottery in both Afrikaans and English. Her work is presented by leading galleries in America, South Africa and Japan. Contact her through her website: www.clayandcanvas.com.