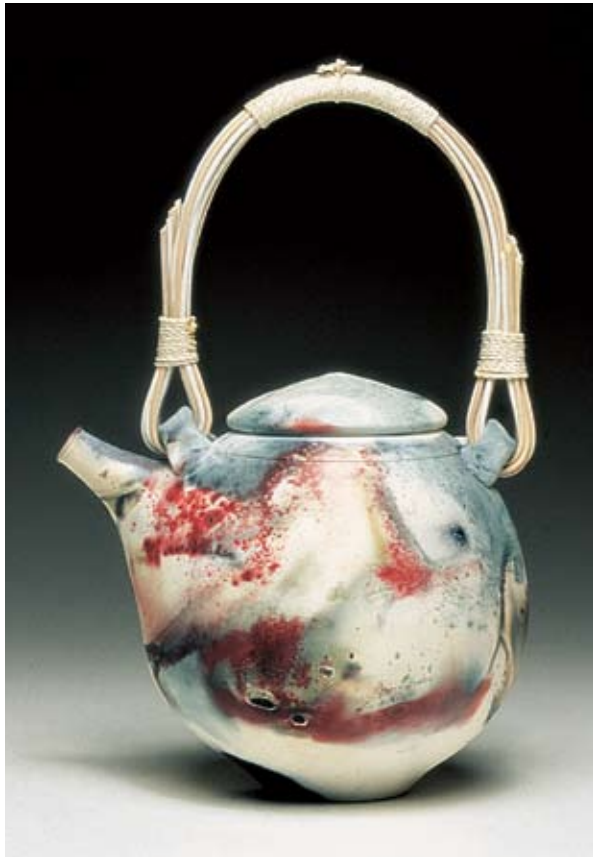


# Martha Puckett

## Porta-Kiln Barrel Firing

by Ginny Marsh



**Teapot, 9 inches in height. All functional pieces are glazed on the interior with a matt transparent glaze and fired to cone 05 prior to the final sawdust firing in the porta-kiln.**

Except for a few pots in the yard, the outside of Martha Puckett's house looks like the others in this older neighborhood on a tree-lined street in Louisville, Kentucky. Even the living room might fool you, and you might think she collects pots or even knows some potters. But if you get as far as the sun-room and see the dusty foot-

prints, you know the neighbors just wouldn't understand.

In the middle of the sun-room sits a potter's wheel surrounded by boxes of clay. Nearby is a wedging board and shelves. All of it is overlaid with the clutter of partially finished porcelain pots, tools, notes and posters. In the large project room at the back of the house, she periodically makes reed handles for some of her work. To keep fumes out of the house, the electric kiln is in the garage.

As a graduate student in the 1980s, Martha attended a workshop presented by John Leach, and from seeing his individual work, became interested in the effects of smoke on pots fired in saggars filled with sawdust. After trying this technique, she soon started experimenting with other firing techniques that allow the smoke to mark the clay body. It was sawdust firing that really excited her, with surfaces as smooth as the wings of a butterfly, and the dark and light swirling patterns of smoke and fire left on the work. Soon, she learned to introduce colors to her work and found this gave her pots that seemed like a private universe.

### The Pots

More intuitive than technical in approach, and with limited space and

resources, Martha learned to restrict her materials to those that were inexpensive and easy to acquire. Having found that a smooth white body best displays the luminous effects of the fire, she throws her work from a mixture of porcelain and white stoneware. The addition of the white stoneware makes a stronger pot, less prone to cracking from the shock of the sawdust firing. Martha uses 3 parts Standard Ceramic's Porcelain Body 130 to 1 part Standard White Stoneware 182.

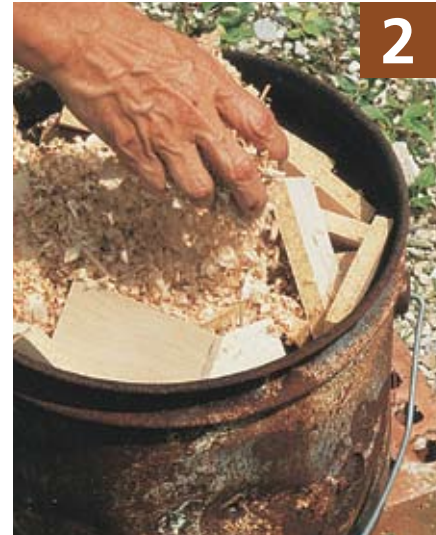
Finding that simple forms with wide smooth surface areas best display the effects of sawdust firing, she smooths off any unwanted marks with a used nylon stocking rolled up and stuffed into its toe to make a soft lump easily held in the hand.

After bisque firing the work to cone 05, she applies a matt transparent glaze on the inside of utilitarian pieces, such as cups or teapots, and forms with rims that have been designed to be glazed. Glazed pieces are then bisque fired to cone 05 in an electric kiln prior to sawdust firing. The glaze develops a crackle pattern in the smoking process.

### The Kiln

Martha usually prepares the work and materials ahead and does the firing in the evening. She uses the following materials:

- One or more prepared pots (bisqued and glaze fired).
- A 3- to 5-gallon popcorn can with lid. Martha prepares the can by punching or cutting about 30 holes into the can. The holes are from pencil diameter to nickel-sized, and they're made with a large nail and a "church key." Holes are located on the bottom and around the lower portion of the can to allow air intake so the combustible contents of the can will burn.
- Two or three bricks, any kind. The bricks are placed under the can to promote air circulation and to keep the hot can off the ground.
- Coarse, dry sawdust. Wood shavings leave too many air spaces and burn too quickly for adequate reduction and temperature gain, while very fine sawdust packs down, and leaves inadequate air spaces for sustained combustion.
- Wood chips. Martha gets small kiln-dried scraps from a local cabinet factory.
- A mixture of equal parts table salt and copper sulfate, perhaps 4 to 6 tablespoons per firing, if desired. Martha buys the impure copper sulfate sold in garden stores (used for controlling roots in drain pipes) instead of ceramic-grade copper sulfate. Table salt increases the tendency of the copper to volatilize.
- Lighter fluid and lighter stick or torch.
- Fireplace poker or a  $\frac{3}{8}$ - to  $\frac{1}{2}$ -inch diameter steel rod about 2 feet long.



### The Firing

Martha has a half-dozen cans of slightly different sizes and with different configurations of holes in them; she fires one to six pots in each porta-kiln, and occasionally starts and tends up to three cans in one session. Her sawdust-firing process takes about two hours of active work and an additional three hours to allow the kiln to cool once the lid is placed on the can. She usually leaves her kiln to cool overnight.

Choose a safe and adequate space on a ground surface that will not burn. Martha likes to fire on an evening when there is no threat of inclement weather or wind.

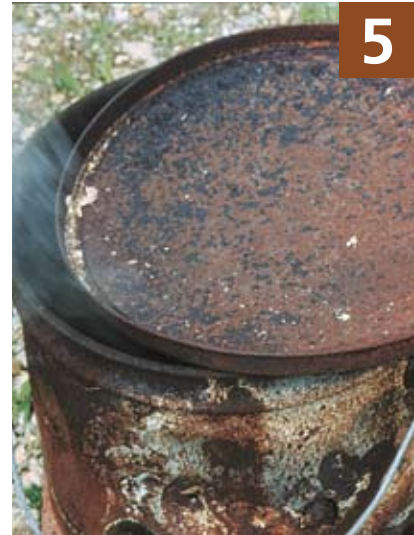
Set the kiln on two or three bricks so the air can circulate under the kiln, and allow room to light the sawdust.

Fill the bottom of the can with 1 to 2 inches of coarse sawdust, pack the pots in the kiln, allowing at least an inch between them. Martha often places them upside down for the firing.

Sprinkle the mixture of copper sulfate and salt on the work (figure 1). Note that the bowl is placed upside down and is resting on coarse sawdust.

Carefully cover the upper most pot(s) with at least 2 inches of woodchips and coarse sawdust above the top of the largest pot (figure 2). Fill the rest of the can with more sawdust.

After coating the top of the sawdust with charcoal lighter fluid, use a torch (like the kind used for charcoal grills) and light the fire (figure 3). CAUTION: Stand back and do not wear loose or synthetic clothing.



The porta-kiln should burn for an hour, more or less, according to the atmosphere, stirring the wood and adding more sawdust if necessary, until the pot can be seen glowing and the wood is burning well (figure 4). This is more easily seen in the low light of evening than in midday sunshine. Martha lets the sawdust smoke heavily at stages, and at other times removes the lid to encourage a fierce flame throughout the firing (figure 5). Smoke from reduction forces black carbon deep into clay while hot spots develop where the wood burns away, leaving white patches. The fire in cans with the larger holes burns more quickly and intensely, leaving relatively larger white areas on the pots than on the pots fired in cans with smaller holes. In the smoky reduction firing, copper typically turns red, but occa-

sionally a flare in the firing leaves bright green traces. Combined with salt, copper sulfate is highly volatile and fumes at the low temperature of 1470°–1650°F, giving varied and unexpected color effects.

When the work can be seen glowing, place the lid on top leaving a 1-inch opening. The placement will have to be watched for a few minutes and adjusted so that smoke continues to come out the open area. The firing is essentially finished about an hour after the lid is put on the porta-kiln.

### The Results

By the next morning, in the brief quiet before work, Martha can remove the newly finished work from the cooled porta-kiln. The kiln often yields satisfying pots with a glimpse of a private world, but if she doesn't



Teapot and cups. Teapot is 10 inches in height (including handle) and the cups are 2½ inches in height.

like the results, she knows she can refire a piece up to 3 or 4 times without losing body strength.

Martha is always working on new variations on the shapes and firing technique. As you go out the door to the firing area in her small back yard, you may notice the small frame on the wall displaying an illustrated quote from William Blake's *Auguries of Innocence*:

*To see a World  
in a grain of sand,  
And a Heaven  
in a wildflower;  
Hold infinity  
in the palm of your hand,  
And eternity in an hour.*



Vessel, 4¾ inches in height, bisque fired to cone 05 in an electric kiln, then sawdust fired in the portakiln, using copper sulfate and salt in a reduction atmosphere.



Vessel, 6½ inches in height. Martha Puckett restricts herself to small precise pots, usually less than 8 inches tall.