

A (Very) Short Course in Raku

By Denny Means

Raku is a method of firing pottery that began in Japan, more than 350 years ago. The name Raku comes from the Japanese ideograph, raku, and means enjoyment, contentment, and happiness. Raku firing as practiced in America is the result of experiments begun by Paul Soldner in 1960. In Raku firing, we fire pots fast, then remove them from the kiln and do something with them.

Raku firings are a social and collaborative event. We will work together to glaze and fire pots in the spirit of Raku that will give us enjoyment and happiness. Potter Robert Piepenburg states, "The raku process is a journey of cooperation and pleasure – an exploration of a different way."

Our goal in this firing is learning and enjoying the process. Please come to learn, to receive, and to give. We will learn a lot from the firing – some lessons can be applied the day of firing; some lessons applied to our future work.

Cooperative work of the group is one key to the success of the day. The generosity of spirit you bring to the event will have a lot to do with what you take away. We will focus on learning through the raku process and on getting interesting pots.

In raku firing, we color pots by means of glaze and smoke. The pots are formed, dried, and then bisqued to a low temperature. Raku pottery is fired only to fairly low temperatures; the pieces will not be fully vitrified, and will not be as strong as pottery fired to higher temperatures. Raku pottery is decorative only and not for food use. Raku has many variations and can yield many different results, even within the same firing. Some pots will have a matt finish and mild color. Some pots will have flashes of metallic copper. A few pots will have outstanding colors in random patterns. A few pots may break in the firing. This process, and each pot, will help us in learning how to make better pots and how to fire them for good results.

Each firing is another step on our learning path, and improved results come as we learn more through experience. This reinforces the point of enjoying the process. We don't seek to judge the experience only by the product - the finished pot. For this workshop we focus on the process, the cooperative work, and the event. Part of the day's product is the experience. So, let's have fun!

Denny Means will be your tour guide for the Raku workshop. Denny has studied Raku for several years and admits to a fascination with the direct application of smoke and flame to pottery. So, bring your pots, a sense of humor, and a willingness to experiment and we will learn a little more, together!



Denny's Tip List – Making Pots for Raku Firing

Raku Firing

In Raku, we fire pots fast - about 40 minutes. Your electric kiln would take 8 hours or more to do this. Most of my glazes are formulated to mature around 1880 degrees. Once the glaze reaches maturity, we open the kiln, and remove the pot with steel tongs. The glowing hot pot is put into a metal can. The can has a few sheets of newspaper in it, which instantly ignites from the heat of the pot. Flames flare up; the paper burns for a few seconds. The lid is placed on the can, smothering the flame. After 20 minutes, the can is opened. Being careful not to breathe the smoke & fumes from the can, we pull the still hot pot out, and then plunge it into a bucket of water!

Inside the metal can, the flame wants to burn; it pulls oxygen from the claybody and the glazes. Copper oxides become copper with the loss of oxygen. Smoke permeates the open pores of the clay. These changes yield the great colors of Raku. To stop the chemical changes in the glaze, we cool the pot in water. Later, we use scouring pads to clean residual tar or fire debris from the pot.

The sudden radical temperature changes are a real test for a well-made pot. Following are my tips to help you have successful pots at our raku firing. Like everything else in pottery, these tips are not the final answer, or the only answer. These tips are general guidelines for a pretty good Raku pot.

Bring two bisqued pots on the day of the firing. Bisque to Cone 05, or what your are comfortable with, down to cone 08. Pots should be made of Raku Clay. We want Raku Clay used to help everyone. At a public Raku firing, several pots from different potters will be in the kiln at any one time. If one pot blows up, it will almost certainly damage or ruin other potter's work. (Clay cost is about \$8 to \$11 a bag. I ask myself, is saving \$8 so important that it is worth risking the ruination of a friend's pot?)

In general, there are two main types of raku clay stocked at local clay dealers. Maxfield carries Columbus Clay's "raku clay." This clay works well, but the grog is rather coarse sand. Some wheel potters do not care for this clay. It is good for slab building, and resists cracking.

Annie's Mud Pies stocks Standard #295 Raku clay. This clay contains kyanite, which provides great strength, plus other very fine grog. The Standard #295 Raku clay is what I use, the texture is as smooth as regular stoneware, if not more so. It throws well.

Leftover raku clay can typically be treated and fired like a regular cone 6 stoneware.

For Thrown Pots:



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- Wall thickness could be a bit on the thick side, rather than on the thin side. (Thin walls lose heat fast, thus certain raku glazes will not reduce well on them.)
- Wall thickness of say, ¼ inch minimum. In general, thickness should not exceed ½ inch.
- Keep **wall thickness consistent** all the way up. If the walls of the piece vary a whole lot, these sections heat and cool at different rates, and will also expand and contract at different rates. Differential expansion may cause cracks and breaking of your work.
- Compress. Compress. Compress.** Compression makes the clay stronger and more crack resistant. Compress the bottoms of your pot. Compress the top edge of the pot as it is thrown. Compress the rims.
- Avoid air bubbles. Deflate any air bubbles. Trapped hot air may explode in the kiln.
- Handles, spouts, or appendages should be well joined and pressed into the base form. Score and slip. Execute the fundamentals.
- Wide-bottomed forms can be a problem in raku; a greater tendency for differential expansion makes them more vulnerable to cracking. Forms up to say, 4 inches wide at the base should be no problem. Forms from 4 to 8 inches wide should be well compressed and of thickness consistent with the walls of the piece. Forms wider than 8 inches, including plates, become more crack prone. (Of course, there is always super glue.) Please discuss with Denny any plans for wide items, or items taller than say, 12.”

For Slab Work:

- Roll the slab in multiple directions for strength. Compress the slab well.
- Minimum slab thickness of 1/4 to 3/8 inches. (Too thin does not hold the heat we want.)
- Make sound joints – score and slip. Backup with a fillet of clay, where possible. Lightly paddle the joined edges where possible.

General Pot Making:



Denny's Tip List – Making Pots for Raku Firing

- ✦ Consider how your red-hot piece will be picked up from the kiln, moved to a can, and put inside a flaming can by me. (I'm not that graceful.)
- ✦ Long, unsupported appendages can be broken in the rigors of moving the pot to the can, or cleaning.
- ✦ When finishing raku pots, be careful if wiping with a damp sponge. If you do, it can wash away the fine clay particles and bring out a big grain of grog. The result is a pot with a more coarse finish, rather than smooth.
- ✦ Write your name on your pot. This is a group firing and we want you to take home the pot you brought.

Glazing:

- ✦ You are welcome to use my glazes. Most of my glazes are designed to mature around 1850 – 1910 degrees, this is fairly high temperature for raku. Firing to a higher temperature gives improved color retention over time. Raku glazes may fade if placed in direct sunlight. Raku glazes are not food safe. My Raku glazes are lead free.
- ✦ Glazes at Crooked Tree Pottery: White Crackle, Copper Matt, Dolphin Blue (semi-matt), Blue-Black Copper, Denny's Mad Awabi – glossy copper to sometimes gold, Clear Crackle, and others as they are available. Application is by brushing.
- ✦ We fire with a digital pyrometer for temperature control and semi-repeatable results. This tool lets us know what is going on inside the kiln and helps time the firing. We go by temperature and the finished look of the glaze at maturity. Cones are not used.
- ✦ **Pots need to be glazed and bone dry** before firing in the kiln. Be on time and glaze your pot first thing. Pots bisqued low will absorb more water and need longer drying time.
- ✦ **DO NOT GLAZE THE INSIDE OF YOUR POT OR IT CANNOT BE FIRED.** Glazing the inside of the pot on the day of firing puts a lot of water into the pot. The pot cannot dry out before firing. A wet pot will likely explode, damaging several other pots. Typically, the inside of a raku pot will be "smoke glazed" black.
- ✦ Remember, **Black** is a color available in raku. Unglazed areas turn black from smoke absorption. Black can be used to good effect on portions of a piece. Example:



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Painting the “stems” on with wax resist before glazing can indicate lines of grass or wheat.

- 🌊 Glaze results vary by thickness of application, firing temperature, reduction during firing, and postfiring reduction.
- 🌊 White Crackle and Clear crackle glazes are applied relatively thick; say two brush coats. Tell Denny your pot has white crackle on it when it is fired. White Crackle pots are cooled in the air before putting them in the metal cans. Be ready to blow on the pot.
- 🌊 Copper matt glazes are applied on the thin side, just one brushed coat.
- 🌊 Blue-Black Copper and Denny's Mad Awabi are applied on the thick side; say two coats.
- 🌊 Dolphin Blue is applied on the thin side. Note: Where Dolphin Blue crosses over top of White Crackle, it turns a dark cobalt blue. This can “spice up” a white crackle pot. (White Crackle on top of Dolphin Blue does not yield the same result.)
- 🌊 Key Point: Put a note with the glaze names/ temperature inside your pot.

You may use your own raku glaze, or commercial raku glazes. However, you must tell me what temperature it matures at. Remember, to make a kiln load, we need 5 to 7 pots of the same glaze maturity temperature, so have someone else use the same glaze.

- 🌊 If you want to use a commercial glaze before the day of the firing, I recommend the Spectrum Brand Raku glazes. Fans of red enjoy Spectrum's Raku Red. These glazes mature at much lower temperatures than my glazes. Typically 1650 to 1750 degrees.
- 🌊 Key Point: Put a note with the glaze names/ temperature inside your pot. The alternative: don't bother with such minor details; end up with a black cinder of overfired gunk. I've been there.
- 🌊 If you want the inside of your pot glazed; do it the days before the firing, using your own glaze or a commercial glaze. Do not glaze the inside of pots on firing day.

Underglaze:

Need more choices? Your underglazes can be used. Days before the firing, apply underglaze. On the day of the firing, apply 2 coats of clear crackle over the underglaze. Result is a smoked version of the underglaze, with crackle.



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Once glazing is complete, we will sort pots by glaze color and maturity temperature. Then place them on tables in the kiln area.

Raku Firing Safety

An important goal of the workshop is to work safely. The most important tool in safety is your thinking cap. Please bring yours.

Most people will have jobs to do. (A list of jobs is below.) Volunteer for the job that you are comfortable doing – handling hot pots with tongs is not a requirement. We will orchestrate a “dance for two” to move pots from the kiln to the cans. Don't inject unexpected moves into the dance by doing something you were not assigned.

Dress appropriately: wear sturdy shoes and long pants. Clothing should be made of cotton, for its resistance to flame. Nylon jackets, polyester pants, etc. should not be worn to the firing. Don't wear sandals or flip-flops.

When lifting the lid of a metal trash can always be cautious! Unburned gases may ignite on contact with air making an unexpected flare of flame. Wear gloves to handle the can lids. When opening a cooling can, avoid breathing the smoke and fumes from inside the can. This may be the place to wear your respirator.

Metal can lids can get a coating of black tar on the edge. This tar may permanently stain clothing. Don't brush a can lid against your leg, etc.

Those working at the kiln or the cans will wear gloves. Please keep gloves DRY. Wet gloves lose their insulating value.

Please note that there are several potentially hazardous chemicals being used in glazing and raku firing. We advise you to review the manufacturer's Material Safety Data Sheets, and to wear the personal protective gear you bring with you. This activity has known hazards and you should not participate if you cannot do so at your own risk.

Do not eat or drink the glazes or glaze materials. Raku ware is not food safe.

Participants concerned about irritable fumes may wish to bring their own respirators.

Raku firing is done at your own risk. As partial payment for this workshop, users and participants agree to hold harmless and indemnify the instructor, the authors and distributors of this material, and the Clay Alliance. Participation in the workshop signifies that you agree to these terms.

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The Job List

Raku firings are cooperative and participatory. No, everyone will not have to belly up to a hot kiln – that is voluntary. Just be prepared to pitch in and help with the chores. The work is shared, and pretty light duty. Duties include:

Tong Team (handlers of hot pots, Denny will lead this team)

Lid Team (People who put the lids on flaming trash cans.)

Can Can Team (People who prepare the cans with fresh paper, empty ashes, etc. High kicks are optional, though encouraged.)

Cleaning Crew (People who clean carbon off the pots after they are cooled.)

This breakdown sounds more organized than it really works; loose organization is about the best we do, typically.

Directions to Crooked Tree Pottery – Mary & Denny Means'

From East Side of Cinti.:

From I-71, exit at King's Mills Rd. (exit no. 25).

Go West (away from King's Island) one mile.

Right onto St. Rt. 741, go approx. 2 miles. At a stop light turn

Left onto Bethany Road, go to next intersection.

Right onto Mason-Montgomery Rd. go approx. 1.3 mi. Take second

Left onto Brewer Rd. go approx. 1/2 mi. Take second

Left onto Club Commons Dr. about two blocks to dead end into Bentwood.

Left onto Bentwood Dr. to no. 5254. The studio entry is at the rear, lower level.

For those using Mapquest, the **complete address is 5254 Bentwood Dr., Mason, OH 45040** Cell Phone: 513-382-2352

From the West:

Exit I-75 at Tylersville Rd. (exit no. 22).

Go EAST approx. one mile on Tylersville to a stoplight at Butler Warren Rd.

Left (North) on Butler Warren Road (a county-line rd.), approx. 3 miles to Brewer Rd.

Right onto Brewer Rd. (This intersection has "Miliken Rd." sign on the left(west) side and Brewer Rd. sign on the **right side** of Butler-Warren. The counties could not keep it simple.) So, now you're going east on Brewer Rd. about 1.2 miles to the second right turn.

Right onto Club Commons Dr., go two blocks to dead end into Bentwood Dr.

Left onto Bentwood Dr. follow to the end cul-de-sac. We are the stone house on the left.

For those using Mapquest, the complete address is 5254 Bentwood Dr., Mason, OH 45040 Phone: 513-382-2352



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Denny Means

Ceramic Artist and Instructor – Information

Denny Means uses earth elements – clay, wood, metal, and fire, to make unique sculpture and vessels. Collectors use his work as an accent or centerpiece of their garden and home décor. Denny is a full-time sculptor and ceramic artist, working from his studio in Mason and at Pendleton Art Center, #512. Mr. Means worked some years in steel construction and he finds his prior experience a great asset. “It’s all about taking a thought from imagination and making it into reality,” states Denny.

His ceramic pieces are often colorful and much of his work is fired using the dramatic Raku firing process. In Raku firing, one opens the kiln at 2,000 degrees and takes the piece out while it is glowing hot. The piece is placed in a metal chamber where sawdust ignites, flames shoot up, a lid is placed over the container. Fire and oxygen combine to make brilliant metallic flashes on the glazed ceramic work. “Raku remains a fascination for me, working up close with the fire demands commitment of the artist and well-made work. Fire can be a harsh master, a great collaborator, and remains the test required of no other art form,” says Denny.

Denny has formally studied sculpture and ceramics intensively for over six years. His studies include master’s level classes in ceramics at Miami University and at Cincinnati’s Throwing Clay Pottery, a teaching studio. Denny studied Raku firing over two years at the John C. Campbell Folk School. His extensive study paid off this spring with the award of a fellowship as a Studio Assistant at Arrowmont School of Art and Craft. This fellowship allowed Denny to spend four weeks in Gatlinburg doing studio work coupled with coursework in sculpture and ceramics. Denny was employed by Arrowmont and lived and worked with other professional artists and instructors at the school. “Arrowmont is a place with abundant resources for art work. The school becomes a wonderful creative engine, powered by the energy of the artists and students living there,” says Denny. Mr. Means previously studied architecture at Georgia Tech and holds a bachelor’s degree from Wilmington College.

Denny’s focus is on creating sculptural wall pieces, coupled with incorporating other materials into the work, such as glass, copper, and steel. He continues to explore surface decoration techniques on vessel forms by using metal and glass to accentuate the work.

Mr. Means’ work is sold through juried art shows and galleries in the region. For more information and a schedule of appearances, see the web site at <http://home.earthlink.net/~crookedtreepots/>

Exhibit Opening: **Herman Miller Gallery Exhibit** opening Friday, August 26, 2005, from 6:00 to 9 p.m. See wall pieces by Denny Means, Metal sculpture by Pattie Byron, and paintings by Phil Pryse. Celebrate with us with music, food, art and fun. East 14th St. at Sycamore. Parking lot is next door. Part of Friday Gallery Walk on Main St.

