successful tips & techniques for raku firing

how to raku and select raku pottery clays, glazes, kilns, and combustibles
Successful Tips and Techniques for Raku Firing:
How to raku and select raku pottery clays, glazes, kilns, and combustibles

Raku firing is exciting and fun. Whether you’re raku firing in your own studio or taking part in a group raku firing at a school, workshop or community center, raku offers many rewards. Raku firing is one of the most exciting processes in ceramics. After you place your pottery into a hot raku kiln, the anticipation builds as you wait for that final moment when the intense heat begins to melt the raku glazes. When you remove the pieces, you can feel the heat and hear the pings of your red hot work rapidly cooling, then it’s into the raku combustibles for a round of flame and smoke. Many surprises await you as you clean the surface and reveal the wonders of raku pottery.

How to Raku
by John Ramer Sherrill

Raku pottery is tremendously popular. The wide range of raku glazing and raku firing methods, and the surprises that come from every firing hold the interest of potters everywhere. While many achieve consistent results, many potters as well as students have been unhappy with their raku attempts. Here is a rundown of the basics you need for success at firing raku.

Raku Clay
by Bill Jones

The raku firing process requires a porous non-vitrified clay that can withstand rapid heating and cooling without cracking or breaking from the thermal shock. By this definition, any clay that can withstand such stresses can be considered a raku clay; however, some clays will provide a greater degree of success. When deciding on a suitable raku pottery clay, your chances for success increase with bodies specifically formulated or adjusted for the raku pottery process.

Raku Glazes
by Steven Branfman

A raku glaze is any glaze you use in the raku pottery method. It doesn’t have to be a glaze specifically designed for raku, formulated to fire at the temperature you fire your raku ceramics to, nor homemade or commercial. Read how your raku glaze can be most anything. The key to success is understanding the raku firing process and the ability to predict how a particular glaze reacts to that process.

Buying a Raku Kiln

There are many configurations for raku kilns—top loaders, front loaders, top hats, car kilns, and clam shells. Here’s a brief overview of what you need to know to buy the raku kiln you need.

A Colorful Variation on the Naked Raku Firing Technique
by Kate & Will Jacobson

Naked raku is a variation of the raku technique in which a slip is applied to the pot before it is placed in the raku kiln. The slip cracks and breaks apart during the firing and is chipped off after to reveal a blackened crackle pattern. Kate and Will Jacobson figured out a way to add some color and drawn imagery in the naked raku technique.
Raku pottery has become tremendously popular in the United States. The wide range of glazing and firing methods, and the surprises that lurk in every firing hold the interest of potters year after year.

Many achieve consistent results, but I’ve talked to dozens of established potters as well as students who have been unhappy with their raku attempts. Most complained that they had been unable to find specific information to properly guide them in their efforts.

For my own early efforts, I obtained several books on the subject, but found them frustratingly long on philosophy and short on technique. I still couldn’t properly fire a raku pot, but I could use my new-found knowledge of Zen to cope with the situation. I don’t believe there are many raku enthusiasts who are interested in my philosophy, wondrous as it may be, but I know for certain that some want to know how to do raku.

**Select a Raku Clay**

A wide variety of clays can be used to make raku pottery. Be aware, though, that the clay used determines much of the character of the finished piece.

Most suppliers sell a body designated as “raku” clay, which is usually a grogged clay that includes Kyanite. It is the clay of choice for really massive raku pieces. Suppliers also usually have bodies that are designated as “ovenware” clay. These clays, which contain less grog (easier on the hands), often make an ideal raku body. I use ovenware clay almost exclusively.

For more information, see “Raku Pottery Clay” on page 5.
Form and Dry Raku Pieces

Raku pots are usually wheelthrown or handbuilt. I’ve heard from several sources that cast pieces cannot be raku fired, but I’ve never had a problem with them although you’ll need to test them.

Some consideration needs to be given to proper drying. As a general rule, drying pots of 3 pounds or less does not require special handling. I often force dry and bisque fire the same day. Flat pieces and large pots must be dried slowly and evenly, though. Large ovenware pots will often survive fast drying, but the stresses that are thereby induced will cause them to crack at a later stage.

Decorate with Slips

If you want a colorful pot, you may use oxides or stains in the glaze, but they may mask the dark crackles to some degree; some almost entirely obliterate them. For that reason, I use colored slips under a clear glaze. My slip base is simple—1 part ball clay to 1 part EPK kaolin. Just mix it with water to a cream consistency and add stain. I use commercial stains in percentages ranging from 2% (dark blue and green stains) to as much as 30% (pink stains).

In order to choose the stains that will work well, it is good to know their chemical components. Most commercial stains will block carbon to some extent, with the worst offenders being those that contain iron or vanadium. Vanadium is present in most warm-tone commercial stains, so you should use titanium yellow, praseodymium yellow or zirconium yellow in combination with other vanadium-free stains to formulate your own palette.

Ideally, the slip should be brushed or dipped on at the leather-hard stage, but it works on bisqueware as well. When brushing, you should apply three coats for dark colors (when you don’t want the body showing through) and two coats for lighter colors (a warm-tone body showing through some, such as pale green, can be very attractive). The pot should then be bisque fired in the cone 08 to cone 04 range.

Glaze Raku Ware

After bisquing, the pot is ready for glazing and the final firing. Glaze should be applied fairly thickly. If you dip, the consistency should be about that of thick cream, and one dipping should suffice. If you brush, the glaze should be somewhat thicker, and two or three coats should be applied. Evenness of application is not particularly important.

It is somewhat traditional to leave the area near the base unglazed. This will turn quite black in a good post-firing reduction, when carbon penetrates the still-hot pot. Other areas may be left unglazed as well. These areas may be random or symmetrical, and can greatly enhance the beauty of the finished piece.

Select a Raku Kiln

Because red-hot pots are removed from the kiln, it is apparent that many models simply are not appropriate for raku firing. Large kilns of any type, when opened at temperature, radiate heat so fiercely that it would be foolhardy to attempt raku firing. Top-loading kilns are not ideal since you must position yourself above the kiln in order to reach inside, and the rising heat can be overpowering.

Small (2 cubic feet or less) front-loading electric kilns may be used, but most raku firing is done in gas kilns especially constructed for that purpose. See “Buying a Raku Kiln” page 8.

Fire a Raku Kiln

Raku kilns, unlike conventional kilns, are usually loaded on a single level, and spaces between pots are left a bit wider in order to facilitate their removal. It is certainly possible to use multiple levels, but it isn’t worth the hassle, as far as I am concerned.

Traditionally, the maturity of the glaze is determined visually. The kiln is opened, and the pot surfaces are examined for complete glaze melt. If mature, the glazes will appear wet and reflective. I strongly recommend using a pyrometer in conjunction with this technique, noting the temperature at which maturation occurs. After a few
firings, you will need to look only at the pyrometer to determine unloading time. There is some medical evidence that prolonged or repeated staring into a red-hot kiln can damage vision.

When examining the pot for complete glaze melt, look for bubbles in the glaze, as these can mar an otherwise perfect pot. Even if the bubbles burst when the kiln is opened, unsightly craters will remain. Bubbles are almost always present on my pots because I fire rapidly, so I simply assume their presence, and take steps to remove them.

To accomplish this, partially open the kiln just long enough to drop the temperature by 200°F or so (I give it about a 10-second count). Close the kiln and bring the temperature back up to near maturity. Give it a couple of minutes for the craters to heal. If you have clusters of bubbles, you may have to repeat the procedure.

Post-firing Reduction in Raku Firing

The final phase of raku firing requires the still-hot pot to be placed in combustible materials inside a fireproof receptacle that can be covered, the tighter the better. The combustible material can be sawdust, straw, leaves, newspapers or anything else that readily catches fire. I prefer a bed of sawdust covered with crumpled newspapers, but I suggest trying different materials to discover what best suits you. See “Finding the Right Combustibles for Raku Firing” on page 16. In any case, the bed of combustibles should be prepared in advance of the firing.

Post-firing reduction is where the novice usually runs into problems. It is potentially a dangerous process, so always take precautions and exercise extreme care. You will be working closely with temperatures up to 1800°F, so you must train yourself to touch nothing without first considering whether or not it may be hot. After a long raku session, I actually catch myself hesitating before entering my home, considering whether or not the doorknob is hot. It is a useful habit to cultivate.

Cover as much of your body as possible (always wear long sleeves), but don’t wear polyester. Taste in clothing is not the problem; the problem is polyester will melt and conform to your body like hot glue. Heat-resistant gloves are a must. A hat and face mask are not absolutely necessary, but are a good idea. I prefer to remove large pots by hand, but for this, special heat-resistant insulated gloves must be used. For smaller pots, long metal tongs are suitable.

Reduction techniques vary quite a lot, so I will simply describe my own; modify as you wish. I remove the pot and place it on a fire proof surface, then wait for cracks to appear in the glaze on the rapidly cooling surface. In bright sunshine, these cracks generally appear as shiny lines. They will announce their appearance with audible pings or pops.

Only then do I place the pot into the reduction receptacle. This action takes place for a small pot, such as a bud vase, in as little as 10 seconds. A very large vessel (5 pounds and up) may require 90 seconds or even longer. This timing from kiln to post-firing reduction is very important, as it will, in large part, determine what kind of crackle effect will be achieved. I find that the sequence I have described gives deep, dark, widely-spaced crackles usually interspersed with networks of finer lines. Varying the timing should soon show you how to get the effect you prefer.

How to Quench a Raku Pot

A lot of pots are lost in the raku step called “quenching.” After reducing for a minute or more, the pot is removed with tongs and submerged immediately in a container of water. The water hisses and bubbles, and the hot pot rolls about as if in pain. Those with narrow mouths will gyrate wildly, and will sometimes rocket themselves clear out of the container. All this commotion by a suddenly animated pot is undeniably a lot of fun, but I no longer enjoy it because I no longer do it.

These days, I just leave small pots in the tightly covered reduction chamber for about 5 minutes, remove them and place them on the ground to cool. I leave large pots in reduction for up to 30 minutes, long enough for them to drop below the quartz-inversion temperature (1063°F), because that is when a large exposed pot is in serious danger of cracking. As far as I’ve been able to determine, the only thing I lose by not quenching pots are pots and, yes, a bit of fun.

After the pot cools enough to handle, all that remains is to scrub it vigorously with a metal pad or wire brush.

recipes

The following gloss glazes are dependable and work well with underglazes and colored slips.

<table>
<thead>
<tr>
<th>Glaze</th>
<th>Cone</th>
<th>Formula</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Clear Raku Glaze</td>
<td>06</td>
<td>Gerstley Borate ............... 70 %</td>
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<tr>
<td></td>
<td></td>
<td>Plastic Vitrox Clay ............ 30</td>
<td>100 %</td>
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<tr>
<td>Translucent White</td>
<td>08</td>
<td>Gerstley Borate ............... 80 %</td>
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<tr>
<td>Raku Glaze</td>
<td></td>
<td>Cornwall Stone ............... 20</td>
<td>100 %</td>
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<tr>
<td>Clear to Cloudy</td>
<td>08</td>
<td>Gerstley Borate ............... 75 %</td>
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</tr>
<tr>
<td>Raku Glaze</td>
<td></td>
<td>Feldspar (Soda or Potash) ...... 25</td>
<td>100 %</td>
</tr>
</tbody>
</table>
Raku Clay
by Bill Jones

The raku firing process requires a porous nonvitrified clay that can withstand rapid heating to low-fire temperatures (approximately 1700º–1950ºF) and rapid cooling without cracking or breaking from the thermal shock. By this definition, any clay that can withstand such stresses can be considered a raku clay; however, some clays will provide a greater degree of success, especially those with a high fireclay content. It’s important to recognize that when deciding on a suitable raku clay, your chances for success increase with bodies specifically formulated or adjusted for the raku process.

Additions
Most clay bodies can be used for raku by adding up to 50% grog. Grog, which is crushed, fired clay, opens the body thus making it less prone to thermal shock. Other materials you can add to increase the ability of a body to withstand thermal shock include silica sand and kyanite. Silica sand can be used as a substitute for grog, especially at the lower raku temperatures. Because it’s not as absorbent as grog, you may recognize some gains in plasticity. Kyanite is a refractory material that matures at about cone 36. One of the characteristics of kyanite is that it expands when heated, which counteracts some clay shrinkage. It also creates a network of needle-like crystals allowing you to make larger forms. Commercial raku clay bodies contain one or a combination of these ingredients depending on other qualities you need in a body, such as the ability to make large work, or whether you’re throwing or handbuilding. You can add any of these materials to an existing body simply by wedging them in. Using a pug mill or clay mixer provides a more homogenous mix, and dry batching provides a more consistent mix.

Bisque Firing
Most raku clays can be fired as high as cone 6–10 since they are formulated as stoneware clays. But clay is clay and it should be noted that when bisque firing for raku, you should not bisque fire higher than cone 04 (1950ºF). Between approximately 2000ºF and 2200ºF the material becomes more dense and glasslike, thereby losing some of its ability to withstand thermal shock.

Tips for Buying Raku Clay
Most clay suppliers offer a range of raku clay bodies that can usually match the qualities you’re familiar with in your regular body. They will be able to guide you either through their product descriptions or in consultation, and many clay producers will even custom blend a clay from your own recipe.

Plasticity: Clays with coarser grog are more suitable for handbuilding, while finer grog makes a better throwing clay. Some commercial clays are suitable for both.

Thermal shock: The larger and thicker the pieces, the more suitable and shock resistant the clay has to be. Increasing the shock resistance means adding more nonplastic refractory material, which may decrease plasticity.

Color: The color of the raku clay body influences the colors of your glazes. Light-colored or buff bodies produce lighter, more brilliant glaze colors and bring out subtle shades, while darker clay bodies have a more muting affect. Raku clays made from buff stoneware, kaolins and ball clays produce lighter colors, while adding earthenware clays and colorants like iron oxide or burnt umber will create darker bodies.

Texture: Adding grog to a clay body affects the texture, since the grog is already fired and does not shrink. While this is not much of a factor with fine or medium grog, it is more noticeable with coarse grog. If you’re looking for smooth texture, you’ll want a body with fine grog, sand or kyanite. You can also create unusual textures by wedging in sawdust or paper pulp, which also opens the body and increases resistance to thermal shock.

As with any clay or glaze, you should test a raku body before you invest a sizeable amount of energy in forming work. Many suppliers offer samples that you can test, or you can try out different additions to your existing body. Mark all of your samples and keep good records of your results.
Raku Glazes
by Steven Branfman

I
n my workshops, I get asked many questions but nev-
er “What is a raku glaze?” Why? Because everyone
knows what a raku glaze is. Right? It’s a glaze that
is labeled “raku.” Wrong. It’s time to expand your
thinking and understand exactly what this whole raku
glaze thing is about.

A raku glaze is any glaze you use in the raku method. It
doesn’t have to be a glaze specifically designed for raku,
formulated to fire at the temperature you fire your raku
to, nor homemade or commercial. It can be most any-
thing. The key to success is understanding the raku firing
process and the ability to predict how a particular glaze
reacts to that process.

Raku, as practiced in the West, is a low-fire method in
which we quickly heat the ware, remove the ware from
the kiln when the glaze has melted, and perform some
type of post-firing process to the piece. The post-firing
phase is usually an immersion in an organic combustible
material to affect the final outcome on the glaze and the
raw clay. Deciding when the glaze has melted takes prac-
tice and is best done by observation, though many potters
use pyrometers to aid in making that decision. Raku is
exciting, often unpredictable to the novice, and fun to do.

Applying Raku Glaze

Glazing work for raku can be done by all the methods
known—dipping, pouring, brushing, spraying, splashing,
dripping, sponging—you name it. Glazes also can be used
alone or in combination. Keep in mind that the applica-
tion of a glaze has a direct effect on the result.

Dedicated Raku Glazes

Glazes specifically designed for raku fall into two catego-
ries—homemade and commercially prepared. If you mix
your own, you’ll find scores of recipes. Search the inter-
et, ask friends, look in any book on glazes or raku, and
look in magazines. In no time you will find more glazes
than you could use in a lifetime. Of course, to mix your
own glazes you must have a stock of materials, mixing paraphernalia, knowledge, and interest. If this doesn’t turn you on there are myriad manufacturers that produce almost as many raku glazes. The advantage of using commercial glazes is that you are given instruction on how to use the glaze, you have a sample of the fired glaze to help guide your results, and the formulation (although not the results!) will be consistent time after time. Of course, commercial glazes are a bit more expensive than mixing your own.

Low-Fire Glazes for Raku Firing
Glazes used in the raku process need not be “raku” glazes at all. At its core, raku is a low-temperature firing method. The fact that we remove the ware from the kiln while the pots are hot and the glaze is molten is irrelevant. Understanding this opens up a whole new world of glazes. Any glaze that’s formulated to fire at the low temperature of raku can be used. First, you must decide at what temperature you are firing. Most raku is done in the cone 010–06 range. Begin by choosing glazes that both appeal to you in color and that fire in your range. You will have to experiment but I have never found a glaze that I couldn’t use successfully.

High-Fire Glazes for Raku Firing
We are not limited only to glazes that melt at the low temperatures. With greater understanding of the raku process, even mid-range and high-fire glazes can be used in the low-temperature range of raku. Try using your regular stoneware glazes as slips. Over the glaze, apply a clear or white raku or other low-temperature glaze. The low-temperature glaze causes the high-fire glaze to melt giving you a new palette of colors to work with.

Other Glazes for Raku Pottery
In addition to glazes, slips, engobes, underglazes, overglazes, china paints, underglaze pencils, oxides, and stains are all viable in the raku process.

Raku Pottery Food Safety
No matter what type of glaze or decorative material you use, raku is inherently unsafe for use as domestic ware. The rapid firing, removal of the ware, and subsequent post-firing phase all contribute to fragility, porosity, and thin, easily flaked glaze surfaces. Not all materials used in raku glazes are toxic. In fact, most are not. Confusion arises when you realize that over the centuries some of the most prized teabowls by tea masters have been raku fired. Be safe, and think of your raku ware as decorative and not functional.
Buying a Raku Kiln
by Steven Branfman

Raku firing is expressive, exciting, and fun. Whether you’re raku-ing in your own studio, or taking part in a group firing at a school, workshop or community center, raku offers many rewards. But the process requires more than just enthusiasm; you need the proper equipment and tools to make the event successful. If you’re interested in getting started with raku or in adding raku to your program, here are a few pointers for getting off to a good start with the right kiln—the most important tool you’ll need.

The Basic Raku Process
With raku you begin by placing your work in a cold kiln and bringing it up to temperature, approximately 1800–1900°F. The rate at which you attain this temperature is based on a variety of factors: size of the work, size and type of kiln, burner output, etc. A raku session usually consists of firing more than one load, so the ability to preheat the waiting work, unload the hot ware safely, reload, and then reheat the kiln all need to be considered. The choice of fuel—natural gas, wood, electric or propane—is important because each of these carries limitations as well as benefits. You’ll need to consider the physical location of the kiln so that it can be placed with ample space around it for safety and space to work. And finally, consider whether you’ll be firing alone, with an assistant, or with a group.

Configurations
There are many configurations for raku kilns—top loaders, front loaders, top hats, car kilns, and clam shells. Some top hats have pulley systems, springs, counter weights, and guiding tracks to raise and lower the chamber. Without the lifting mechanism, a large top-hat kiln requires two people to safely lift the body off, while smaller kilns require only one person. After gaining experience, most raku potters gravitate to one specific style and design. The important thing with any kiln is that you are comfortable with its workings. It must accommodate your work. It must be possible to safely open the extremely hot kiln, remove the contents, reload, and close it up again losing as little heat as possible. Before buying or building a kiln, do as much observation, participation, and research as possible.

Temperature
Even though most raku firing takes place in the cone 010–04 range some of the kilns on the market are rated for higher temperatures—up to cone 10. While some kilns are designed specifically for raku, others were originally de-
signed as stoneware kilns that can be used for raku or were modified for raku. You’ll need to check with manufacturers about the full capabilities of their kilns.

Fuel

Raku kilns can be fired with natural gas, wood, propane or electric (see page 36). If using propane, you’ll need to purchase or rent a tank. While a 20 lb. tank works on warm days or with smaller kilns, it is recommended that you get a larger, refillable tank, or purchase two or three smaller tanks and gang them together with the appropriate connectors. You can take 30, 40, 60, 70, and even 100 pound tanks in for refilling. With propane, more surface area in the tanks means more gas will be produced assuring a steady supply. This is especially important as you get into larger kilns with bigger burners. With natural gas, you are limited to the available pressure and location of a gas line, but there is some flexibility because you can lead a gas hose to the burner.

Burners

Burners are rated by their output, which is measured in Btu’s (British thermal units). Natural gas and propane use different orifice sizes so you’ll need to specify which kind of fuel you’ll be using. Kiln manufacturers have done the engineering for their kilns and have matched the appropriate burner(s) with the unit, taking size, insulation, and temperature range into consideration. Many manufacturers also offer regulators, gauges, and safety features with their burner, which are described in their literature. If you’re building your own kiln, instructions should include burner specifications. If not, consult with a burner supplier. Kiln size, construction materials and type of gas being used is all the information they will need.

Electric

While any electric kiln can be used for raku, there are some electric kilns on the market specifically designed for raku. Regardless, you’ll need to either locate the kiln outside, or near an outside entrance so you can unload the kiln and quickly move your pieces outdoors for the subsequent post-firing phase. One hazard with using a standard electric kiln is that the power must be shut off before reaching into it with metal tongs to eliminate the possibility of accidentally touching a live element. Some electric kilns are built with a lifting mechanism, which raises the entire body of the kiln, including all the electrics, up and out of the way when loading and reloading.

The Do-It-Yourself Option

One option is to build a raku kiln from one of the many plans available in books and online. We have two plans on our website at www.potterymaking.org, one for a fiber-lined wire-frame design, and the other a small fiber-lined barrel. Another inexpensive option for the DIY route is to purchase a kit. Some kits, which include all the materials needed to not only build a kiln, but also essential extras like tongs, furniture, gloves, etc.

Safety

Raku is inherently a dangerous activity, but no more so than working around a bonfire. If you purchased a commercial kiln, you’ll need to read, understand, and follow all safety instructions provided by the manufacturer because their warnings are based on experience and following them assures an accident-free experience. If building your own, be sure that you’re comfortable and confident in your design and experience. The appropriate clothing, gloves, and eye protection are critical for protection against the kiln’s heat for any of those handling the work, and in both solo and group situations, attention must be paid to the “choreography”—the dance—of the raku firing process. It is certainly not the time to be tripping over one another.

Cost

Many commercial raku kilns are priced under $1000 with a few fetching more than $2500 because of the need for higher end functionality. Building your own raku kiln from a kit or rounding up all the pieces and parts can lower your costs. It is similar to buying a computer or any other major appliance; determine what’s in your budget and then look around, but don’t forget to factor in tongs, gloves, goggles, shelves, and the other equipment you’ll need. We’ve listed most of the manufacturers and their website, and several of these sell through distributors, which may be closer to home so you’ll pay less for shipping.

Test Drive

If you haven’t tried raku, but have always been fascinated by the spontaneity, immediacy and simplicity of the craft, by all means, sign up for a workshop. You’ll be amazed at what a great activity this is and why it’s one of the most popular clay studio techniques around, enjoyed by thousands of potters of all ages.
A Colorful Variation on the Naked Raku Technique

by Kate and Will Jacobson

Jacobson’s Two-Step Naked Raku Technique

Although we have lived in many different places and experimented at length with materials, our approach to naked raku is basically the same as it was 25 years ago. We like to throw thin-walled pots with cone 10 Laguna clays (Amador and WSO). When the pots are leather hard, we apply a thin layer of colored clays. Most of these are colored porcelain, but we also use some white stoneware and earthenware. The colored clays are first brushed on and allowed to dry for 10–15 minutes. By using the color clays “watered down” you can get the color underneath to show through when burnished.

Once the colored clays have dried, they can be burnished. The first burnish is just to smooth the clay out. Care is taken to fill in any divots or rough spots. We then let the pot sit for 1–4 hours to dry further, then burnish at least once more to get a glossy surface. To retain this gloss, the pots need to dry slowly for 1–2 days.

We then bisque fire the pot to about 1427°F (775°C). We find there is a fairly wide temperature variation, 122°–158°F (50°–70°C), that can be acceptable to us for our clay body & style of work.

After the bisque, we apply the resist slip and glaze combination that gives naked raku its special look. For the resist slip, we brush on a thin layer of our Amador throwing clay. It holds on to the pot very well throughout the process and comes off with ease after reduction. We have experimented with making the resist slip from lots of different stoneware clays with excellent results. Be sure that the pot does not feel too “cool” to the touch before glazing.

We use the 65% Ferro frit 3110/35% Gertsley borate glaze we developed in 1985. We have used other raku glazes and experimented with the percentages and variations of frits and borates in the glaze, but have not found one that works better than the original formula. The raku glaze is poured on to the pots and may be brushed on to smaller pieces or sculptural work. As the glaze has a lot of Gerstley borate, it quickly begins to set up or thicken within 30–45 seconds after it has been stirred. So, time is of the essence in getting it to pour well.

We suggest you try two or three different thicknesses until you get a feel for what each layer will do in the fire. Generally, the thinner layers will have tighter, smaller crackle lines than a glaze that was put on slightly thicker. If you go thick, the crackles will be very large and spaced far apart. Thick glaze also can fire out with dots and shadowy areas with very little crackles. There is simply no substitute for firing a lot of pots
Brushing on colored clays, prior to burnishing.

Applying a thin layer of resist slip, Laguna clay WC370 Amador.

Pouring on a layer of glaze.

Etching a design through the glaze.

Firing very slowly for the first 10 minutes, slowing raising temperatures to 1364°F (740°C).

Orange peel, watch carefully as the glaze changes texture.
through to get a feel for the slip/glaze relationship.

After the glaze has dried for a few minutes, you can then etch drawings through the slip/glaze layer. We use a wooden tool with a sharpened point. This is done gently so as not to scratch the surface of the pot. The smoke from the reduction chamber will enter the clay thereby creating deep shadowy crackles on the surface. The etching becomes a smoke drawing.

We fire one piece at a time to about 1368°F (740°C). The best indication of when to pull the pot out of the raku kiln is when the glaze matures to an “orange peel” look. There should be plenty of very rough texture all over the pot. Raku kilns heat up differently, clay bodies mature differently and the slip/glaze combo has variations. Firing 6 to 10 pots, one after another, will give you a good idea of how the kiln, glaze and ambient temperature are working together. Glaze and fire, glaze and fire, glaze and fire and keep a journal of it all. Remember, everyday, you are making history.

We create a smoking chamber by digging in the ground and filling it with wood chips. Once the pot is removed from the kiln, it is cooled in the air outside the kiln for about 45 seconds. As soon as we hear the glaze crackling, it is time to place it in the smoking chamber and cover it with more wood chips. The hot piece is then covered completely with a metal container that allows the carbon to be trapped by the clay body.

Fifteen minutes later the piece is cool enough to handle and is removed from the smoking chamber. A light spray of water is applied and the glaze falls off easily. Gentle rubbing with steel wool and water further cleans the piece and reveals the dark shadowy crackles and matte surface that is the signature look of naked raku.

At this point, we often apply thin washes of acrylic to enhance the imagery we have etched through the glaze. The thoughtful integration of form and surface guides us in our work. We use clay as a canvas. Balance is created by unifying the illusion of control, as evidenced by the etched imagery, with the mystery and random nature of the fire.