

# RAKU FIRING

Translated raku means - ease, pleasure or enjoyment

Wabi – Rustic

Yin = easy side, Yang = warrior

Naked Raku – try colored slip/terra sigillata – burnish – bisque

Ferric Chloride – hot = amber, cooler = orange, cooler = yellow

One reduction technique - Set on 4 sheets of newspaper (cradle on bottom)  
put one piece on top, cover with damp towel.

## Glazed Raku

**Dave Deal surface technique notes:**

- Rub leaves into the leather hard clay surface. (texture)
- Using leaves as a mask, a red iron oxide is applied over the leaves. Remove after the leaves dry.
- Bisque
- Glue leaf stencils with rubber cement, and then clear glaze is applied over the whole piece.
- Fire to 2000 F reduce in barrel with fir bows, then add straw and more bows.

## RAKU GLAZES

Mix 2000 gr batches

### White Crackle – Raku

|                 |    |
|-----------------|----|
| Gerstley borate | 80 |
| Custer spar     | 20 |

### Lizard Skin

|                 |    |
|-----------------|----|
| Borax           | 10 |
| Lithium Carb    | 15 |
| Gerstley Borate | 70 |
| Neph Sy         | 20 |
| Magnesium Carb  | 40 |
| Chrome Ox       | 4  |
| Copper Carb     | 5  |

### Dry Alligator

|                 |      |
|-----------------|------|
| Gerstley Borate | 52.5 |
| Neph Sy         | 12   |
| Bone Ash        | 23.5 |
| Copper Carb     | 12   |

Dry matt texture with rainbow colors.

# Horse hair

- sugar granules = black dots – bisque to cone 010 fire to 1200 F
- Ferric Chloride = 2t to 8oz water ( stannous chloride and copper sulphate = MORE
- If the carbon is too dark, you can try using bleach to lighten the area, rinse thoroughly to remove all bleach.

# Copper Matte

Copper inference: The main purpose of a reduction lid is to cut off oxygen. This prevents the copper from re-oxidizing as it will do until it cools to **392° F**.

10 seconds of vigorous flames licking evenly over the pot are required.

¼ cup denatured alcohol per gallon can, place in for reduction. Will flame. Let flames lick pot for 8-10 seconds. Snuff flames and allow to reduce.

Textured clay surfaces (burlap) make the color range wider.

## Copper Matte – raku firing procedure #1

- Thin layer of copper matt for consistent results. (the layer will almost feel TOO THIN)
- The most effective application is to spray. (spray bottle OK) even a pressure garden sprayer will work.
- Fire to 1800-1900 degrees F use a pyrometer
- When temp is reached, turn off burner
- Cool to 1300-1400 degrees
- Place in reduction chamber with 1 sheet of folded paper in bottom place another piece of paper over piece
- Use a container **just to fit the piece** with a tight fitting lid
- Wait 10 minutes and remove from container and watch colors develop
- Cool with water spray to set colors

## Copper Matte surface firing procedure #2

- white clay body grogged with molochite
- Thrown, using a rib to get a smooth surface
- Bisqued to 1796 F
- Copper matte applied
- Fired to 1832 F
- Placed onto a thin layer of sawdust
- After flames lick sides for a bit,
- Cover until cool

## Copper Matte Recipes

### Hasselle CM Jan 97 Copper Matte

|                 |    |
|-----------------|----|
| Black copper OX | 80 |
| Ball clay       | 20 |
| bentonite       | 3  |

### Sunday Copper Matte

|             |    |
|-------------|----|
| Copper Carb | 90 |
| Frit 3110   | 10 |
| Bentonite   | 2  |

### Pipenburg Patina

|                 |              |
|-----------------|--------------|
| Copper Carb     | 1 part (cup) |
| Bone ash        | 3            |
| Gerstley Borate | 4            |
| Frit 3134       | 2            |

### Hines Patina (measure by volume eg: cup,Tbs)

|                                 |   |
|---------------------------------|---|
| Gerstley borate                 | 7 |
| Bone ash                        | 3 |
| Neph sy                         | 2 |
| Cornwall stone                  | 1 |
| Copper carb                     | 1 |
| Dry matt with variety of colors |   |

### Jeff's Patina (measure by volume)

|                 |     |
|-----------------|-----|
| Copper carb     | 1   |
| Red Iron Ox     | 1/8 |
| Bone Ash        | 1   |
| Gerstley Borate | 5   |
| Neph Sy         | 1   |

### Strozier Copper Matte

|              |    |
|--------------|----|
| Frit 3110    | 25 |
| Copper carb  | 75 |
| Red Fe0      | 10 |
| Colbalt carb | 5  |

Apply thick, fire to 1900 degrees (80/20 temp test piece)

Turn off heat, let cool to about 1200 degrees

Reduce in newspaper allowing active flames to lick the pot

As colors develop, bury pot in **damp sawdust**, leaving pot open to continue to cool

### **Multiple Firing Copper Matte Variation**

Copper carb           90  
Frit 3110               10  
Lithium carb           5

Variation #1

Add 2% copper carb

Variation #2

Add 2% rutile

Spray base – fire

Spray var #1 – fire

Spray var #2 – fire

### **Lehman copper matte satin**

Barium carb           4.17  
Borax                   4.17  
Copper carb           62.5  
Lithium carb           12.5  
Frit 3134               16.66  
Sieve with 80 mesh sieve  
Spray on a very thin layer

Fire to cone 011 flat

Reduce in sawdust covered fresh picked leaves and grasses

After 30-40 seconds, color begins to develop on the side where flames lick up. At this point, cover piece in place and allow to reduce completely.

Variation- uncover after about 5 minutes or so, for 3-4 seconds oxidation. Doing this will enhance color development.

Seal copper matte = **JASCO** silicone grout sealer (keeps from tarnishing)

## **Peel Away slip**

- Create a basket to hold pieces so that when removing the pieces the slip does not fall off before you put it in the reduction chamber. (#10 binding wire, BBQ grate)
- Thrown with smooth porcelain clay
- Bisque Fired to ^07
- Then sanded to make the surface very smooth
- Coat the piece with a layer of slip.
- immediately place a piece of cut fiberglass screening around the piece (optional)
- wrap that with newspaper to follow the screening
- stack the pieces in the wire basket
- fire to maturity
- Place the basket in the reduction chamber with newspaper, add some sawdust too.

- the fiberglass screening will take most of the peel away slip off with it.

## Peel-Away Slip Recipe

Slip is mixed to the consistency of pudding.  
Add 10 % copper oxide (will add some color)

### Naked Raku Slip #3

50% - Lincoln fire clay  
20% - #6 tileclay  
20% - grog  
10% - Custer feldspar

### Naked Raku Glaze #3

65% - Ferro Frit 3110  
35% - Gerstley Borate

### Slip Resists NOTES:

- Burnish the surface of the piece with Terra Sigillata (colored). Apply terra sig thin
- Thin layer of slip will yield smaller cracks
- Thicker layer will produce larger cracks.
- You can use NO GLAZE but the piece must be fired flat to prevent it from falling off. You can mask areas to have no slip, or apply the glaze in patterned areas.
- Burnish
- SPRAY with a thick layer of resist slip ( **1/8 inch thick**, judged with a pin)
- Thoroughly dry piece
- SPRAY on glaze to fix slip, color the glaze with food coloring so you can tell when all covered. Do not pour or cause to be wet, you want a powdery layer. Spray from some distance to particles dry when they hit pot. Do not make wet, apply several layers.
- **Inscribe Pattern:** use a wooden toothpick to just scratch through the glaze layer, do not go down to clay surface.
- **FIRE:** fire one piece at a time to 1566-1670° F. Remove and reduce in sawdust or straw to get a good reduction.
- **FINALLY:** wash dry, wax
- Can dampen bisque piece first to allow for a slower drying
- Use very fine pin or pencil to inscribe pattern, do not go through to clay body if horizontal, it is OK to scratch through to the clay, no need for fixed glaze.
- Let piece dry completely so moisture does not pop-off chunks.
- could spray oxides, colorants on surface first for patterned background