

# LA MERIDIANA

INTERNATIONAL SCHOOL OF CERAMIC ART IN TUSCANY



## Notes on raku

### HISTORY

The name “raku” first appeared in 16th century Japan. Roughly translated it means contentment, enjoyment, pleasure and also “ the best in all the world”. It paid homage to the work of Chojiro who had been chosen by the influential tea master Senno-Rikyu to produce wares of refined simplicity for the Zen Buddhist tea ceremony.

Recent history has seen the raku name attached firmly to the work of Western artists. It is important to remember however, that while acknowledging the influence of the Japanese, the varied techniques of Western-style raku are somewhat different than those practised in Japan for centuries. The first introduction of raku to the West came via Bernard Leach in the 20’s. But by the early 30’s there wasn’t any significant attention given to it. In the 40’s and even more in the 50’s a significant number of artists, both in the United States and England were involving themselves with raku research.

It was only in the 60’s, when the American artist Paul Soldner began experimenting with the technique and post-firing reduction that raku started to be well known. His development of raku techniques has opened up a fertile new territory in which potters can indulge with passion.

### CLAYS

A raku clay is simply any clay which can survive the rapid heating and cooling which the process imposes.

Most raku clay bodies both for handbuilding and throwing use high temperature clays, such as fireclays and stoneware, as their base. These clays in the firing are usually not vitrified therefore leaving plenty of spaces within their structure for movement during heating and cooling.

To increase this openness, and to give clays more suitable working properties according to needs, grog of different sizes is normally added up to 25-30%.

Having achieved a suitable clay for the specific use the thermal shock resistance can be improved with the addition of materials such as spodumene and talc with a total amount of up to 15%.

### SLIPS

In order to change the clay surface and/or colour we can use a variety of materials like slips, terra sigillata, colouring oxides or stains. To the slips enough flux should be added, normally under the

form of a frit, in order to make them adhere tightly to the bisque; otherwise they may peel off after the glaze firing.

## GLAZES

With the advent of a range of lead, soft alkaline and borax frits, much experimentation has been made possible with glaze recipes. Experimenting with raku glazes is quick and results are almost immediate and so progress and knowledge are achieved rapidly.

A simple way of finding out about glazes suitable for raku is to test fire any soft-firing frit and combination of them. They'll all melt at temperatures below 1000°C (1830°F) and provide a variety of possibilities for colour and surface quality. Some flint is often added to a fritted base to increase hardness, and a small amount of clay will soften the glaze and improve its flotation. Zinc oxide is also a useful auxiliary flux to promote even melting. Finally and if necessary, the addition of a glaze suspender or bentonite will prevent rapid settling of the frit component.

## COLOUR

Any low-temperature glaze can be stained up by the addition of oxides, underglaze colours or stains. Colours will differ between alkaline and acidic glazes, such as high-alkaline frit glazes and lead frit-based glazes. As a starting point refer to the following guide:

White	5-8 parts tin oxide ( but tin inhibit crackles)
Turquoise	1-3 parts copper oxide
Green	4-8 parts copper oxide
Blue	2 parts copper oxide and 0.5 cobalt oxide
Purple	5 parts manganese oxide

Many colours (reds, yellows, greens, blue, etc) can easily be obtainable using stains. As a starting point use 5-6% parts and move on from the results.

High alkaline glazes seem to produce the best range of colours. Glazes containing lead seem to produce a more linear and drawing like crackle.

The basic requirement for a raku glaze is that it should melt smoothly and evenly. It is best to fire types of glazes with similar melting characteristics together. Hence the choice by some ceramists to adjust some of their raku glazes to a similar melting temperature in order to facilitate the firing process.

## SOLUBLE SALTS

These are a range of chemicals – usually metal chlorides and nitrates – which produce lustrous surfaces when used in combination with a raku firing and post – firing reduction. Silver, gold and mother-of-pearl iridescence are some of a number of effects which can be achieved in a variety of ways.

Metal salts (silver nitrate and/or bismuth sub nitrate) can be mixed into the glaze, metal salts are applied as a wash or sprayed on the glaze surface before firing (stannous chloride, sulphates of barium, copper and iron, as well as silver and bismuth nitrates) or

## FIRING

Peering into the hot kiln to judge the melt of the glaze is still the best practice when it comes to deciding on the right moment to draw the pots. Pyrometers are useful guides. As glazes mature they go through a series of chemical changes that will produce bubbles and enough time must be given for these to settle down.

## RECEPIES

### BODY RECEPIES

#### La Meridiana

Ball Clay	36
Caolino	33
Molochite (-80)	27
Bentonite	5

#### Paul Soldner

Talc	20
Lincoln fireclay	50
Sand (-30)	30

#### David Millar

Fireclay	50
White earthenware	20
Talc	15

### SLIPS

#### White slip (Base)

Ball Clay	80
Caolin	20

#### Black slip

Base +	
Iron ox	10
Mang.ox	4

#### Blue slip

Base +	
Iron ox	2
Mang.ox	1
Cobalt ox	2

#### Green slip

Base +	
Cromo ox	8

### RAKU GLAZES

#### White

FFA5	40
FTA 1002	40
Caolin	12
Quarz	5
Tin oxide	5

#### Pink

FFA5	40
FTA 1002	40
Caolin	12
Quarz	5
Tin oxide	2
Pigment SC49	3

#### Turquoise

FFA5	40
FTA 1002	40
Caolin	12
Quarz	7
Copper oxide	1

#### Green

FFA5	40
FTA 1002	40
Caolin	12
Quarz	5
Copper oxide	5

#### Blue

FFA5	40
FTA 1002	40
Caolin	12
Quarz	5
Copper oxide	2
Pigment 500F	0,7

#### Yellow

FFA5	40
FTA 1002	40
Caolin	12
Quarz	5
Pigment SC30	6

FFA 5. Low temperature alkaline fritt.

FTA 1002. Boric fritt.

## NAKED RAKU

### **Resist slip**

Caolino	50
Quarz	50

### **Glaze**

Any raku glaze

## VARIOUS

### **Copper engobe**

Copper oxide	80
FTA 1002	10
Bentonite	10

### **Black engobe**

Black pigment	50
Boric frit	20
Ball clay	30

### **Smoke firing slips**

Ball clay	50
Porcelain	10
Colours are obtained with additions of stains or oxide	

### **Basic testing**

Test n°1.

#### Testing different frits.

F1	Lead frit
F2	Boric frit
F3	Alkaline Frit

Test n°2

#### Testing the glaze

Test of various frits at 80% with the addition of 10% Caolin and 10% Quarz. Vary the amounts. For whiteness add small amount of tin or zircon.

Test n°3.

#### Testing colour

- Copper oxide from 1 to 8% for turquoises to greens (linear text)
- Cobalt oxide or carbonate (small quantities) or blue pigment for blues
- Any colour stain or colouring oxide from 1 to 8
- Combinations of stains like:

blue stain	0.5	1	1.5	2	2.5	3	
	9.5	9	8.5	8	7.5	7	copper oxide

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